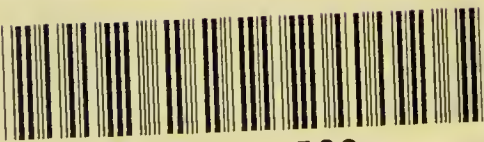


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THE  
PREVENTION AND CURE OF DISEASES  
BY  
MOVEMENTS.



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THE  
PREVENTION AND CURE  
OF  
MANY CHRONIC DISEASES  
BY  
MOVEMENTS.

AN EXPOSITION OF THE PRINCIPLES AND PRACTICE BY THESE MOVEMENTS  
FOR THE CORRECTION OF THE TENDENCIES TO DISEASE  
IN INFANCY, CHILDHOOD, AND YOUTH,  
AND FOR THE CURE OF MANY MORBID AFFECTIONS OF ADULTS.

BY  
M. ROTH, M.D.

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LONDON:  
JOHN CHURCHILL, PRINCES STREET, SOHO.

—  
MDCCCLI.

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“ It is not enough for the physician to know that bodily movement is useful in a disease, but he must also be enlightened by physiology, in order to be able to prescribe what kind of movement must be used. He must previously determine the changes to be produced in the different organs, and know how the organism will gain different advantageous modifications from movements. If he has not this indispensable knowledge, his remedy may become very dangerous, and will always be imperfect in its results.”—LONDE.

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## Dedication.

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TO

PROFESSOR BRANTING AND PROFESSOR GEORGII.

---

GENTLEMEN,

VERY many already look to you, as those to whom LING bequeathed the task of making known, advancing, and developing his system of Treatment by Movements, for the results of your great experience; but, meanwhile, accept the dedication of this elementary treatise, which I offer to you, in the hope that my imperfect work may soon be succeeded by your more perfect and masterly elucidations and illustrations of the science you practise with such meritorious zeal, skill, and acknowledged success.

Yours faithfully,

M. ROTH.

LONDON, 16A, OLD CAVENDISH STREET,  
CAVENDISH SQUARE; *August*, 1851.





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ment of the healthy body, but without the necessary consideration of anatomical and physiological laws, as may be seen in all existing gymnastic institutions of the ordinary kind, and in barracks, where there is constant and methodical drilling, conducted without science on the part of the teachers, and very tedious to the taught. This defective system very often produces undue disproportion of different parts, instead of harmony in the development of the whole body; whereas if the exercises were conducted on scientific principles, they would always be beneficial and never injurious.

2nd. The discontinuance of various torturing methods now practised in many orthopædic institutions, in which the human body is treated as if it were a lifeless mass, and is subjected to undue violence, unhealthy constraint, and unnecessary pain. The occasional benefit of the different kinds of apparatus and appliances used at such institutions, is greatly outweighed by the positive damage done in the majority of cases.

3rd. Certain surgical operations, as the cutting of tendons, would be frequently abandoned as unnecessary.

4th. Many diseases, which have resisted other methods of treatment, may be alleviated or cured by these movements, either alone or in conjunction with other curative agents.

5th. Neumann says: "Every medical man who finds pleasure in study, will certainly be well pleased in being able to assist any patients whom he previously was obliged to leave uncured. The wish of professional as well as non-professional men to use less medicine is in part fulfilled by this method, which for this reason deserves to be recommended. It may be made a great blessing to the poor especially, as being curative in many chronic diseases, whilst it would save them the material sacrifices they have to incur when they are treated by means of medicines. The assistance of one or two persons for the purpose of these movements is procured by the poor

more easily than money, and almost every one has either a friend or relation who would bestow half an hour daily, in order to relieve him from his sufferings. Even the greatest stranger assists the poor if it costs nothing, and he can contribute to the alleviation or cure of suffering."

In calling the attention of professional as well as non-professional men to this mode of treatment, I hope that all who have a real interest in the progress of the noble science of the treatment and prevention of diseases, will unite for the establishment of a large institution, in which this, together with the harmonious development of the healthy body, would be taught theoretically and practically. At such an institution, intelligent persons of either sex would be trained for the purpose of conducting these movements on the necessary anatomical and physiological basis; and the profession would at the same time have the opportunity of learning the practice of these highly important curative, hygienic means. Such an institution has already existed in Stockholm during the last thirty years; another has been lately established in Berlin, and a third in St. Petersburg.

In order to give a short and general survey of the treatment by movements, it is necessary to divide the whole subject into the following principal sections:

1st. The history of the treatment by movements before and since the time of Ling, with observations and popular and medical cures by mechanical agents, collected from different ancient and modern authors, and the present state of Ling's system in Sweden, Russia, Germany, France, and England.

2nd. The doctrine of the general and specific movements, and of their effects, according to the present state of this science.

3rd. The treatment of certain diseases by movements.

The drawings of the movements, which belong principally to the development and strengthening of the healthy,



are partly copies of those published by Ling, and are partly originals. The drawings of the curative movements which we give are comparatively few out of very many, as the combinations and modifications of which the medical gymnastic science admits may be varied almost without limits. They were taken from life by an artist, engaged expressly for this purpose. In my opinion, these drawings are indispensable for forming a just idea of the treatment of at least some diseases; especially for those persons who have not the opportunity of seeing them practically executed. Should I have in the least degree contributed to making Ling's mode of treatment known, and to the physical training of future generations, which should be always a part of education, my labour will not have been in vain.

## CHAPTER I.

### HISTORICAL SKETCH OF THE TREATMENT BY MOVEMENTS.

THE employment of movements for the development of the human body, as well as for the cure of diseases, was known in the most ancient times. If we go back to the mythological æra, we find that *Æsculapius* was thought to have been the inventor of bodily exercises, and we are told that *Medea* recommended them for the purpose of strengthening weakly persons.

*Iccus* of *Tarentum* and also *Herodicus* of *Selymbra* gave them a scientific basis. The last made use of them for medical purposes, which is the reason he is considered to have been the first inventor of this art. *Hippocrates* was one of his pupils, and superintended the exercises in his palæstra. *Diocles*, *Praxagoras*, *Erasistratus*, *Phylotimus*, *Herophylus*, *Asclepiades*, and others, deserve mention in the history of the gymnastics of the ancients. *Hippocrates*, *Galen*, *Cornelius Celsus*, *Avicenna*, and *Oribazius* have recommended in their writings the use of these exercises. *Mercurialis* wrote a treatise in the year 1569, "*De Arte Gymnastica*," in which he recorded the most important exercises used by the Greeks and Romans. Amongst the writers of the last and present century, we quote only *F. Hoffmann*, *Stahl*, *Fischer*, *Albertus*, *Boerner*, *Gerike*, and *Heiter*.

In the year 1728, *Francis Fuller*, a surgeon in London, wrote a treatise, which he called "*Medicina Gymnastica*," in which he recommends different movements in some diseases, according to the example of the great *Sydenham*. In 1780, *Tissot* published a work on *Gymnastics*, which

induced medical men to employ these means. In 1794, John Pugh, the anatomist, published in London a physiological, theoretical, and practical treatise on the utility of the science of muscular action for restoring the power of the limbs.

Londe wrote, about thirty years ago, an interesting work on this subject, entitled "*Gymnastique Médicale*." Unfortunately the second part was never published, in which he proposed to give the mode of exercise suitable for the prevention and cure of specific diseases. We believe he was the first to foresee the importance of applying specific movements to the specific circumstances of different cases. The realization of this idea was reserved for Ling's genius.

Dr. Koch's "*Gymnastics*," in relation to dietetics and psychology, published in 1830, is one of the most interesting works on this subject.

On the use of single and principally passive movements in different diseases there are many works. We have already collected no less than twenty-five treatises on friction only; others have been written on ligatures, compression, vibration, percussion, etc. etc.

All this shows the importance of movements, to which, as we are convinced, a great part of the results produced by the so-called water-cure is owing, in which the douche, the compresses in form of ligature, the friction, etc., have so great an influence, as well by their dynamical as by their mechanical effects.

Gutsmuths, Jahn, Salzmann, Clias, Amoros, Nachtigall, Spiess, and others, wrote on *Gymnastics*, respecting the development of the healthy human body; and it is due principally to these men that bodily exercises are now much more generally practised than they were formerly; and that their beneficial action is now admitted in France, England, Germany, Denmark, and other countries, though they do not yet possess the anatomical and physiological basis which Ling's ideas must necessarily impress on them.

## LING'S BIOGRAPHY.\*

The present state of the scientific treatment by movements, and the development of this doctrine, is intimately connected with the life of Ling, so that his biography is a necessary part of its history.

Peter Henry Ling was born on the 15th of November, 1766, at Smaland. His father, who was a curate, died soon after his son's birth, and his mother, who married again, died a short time afterwards. Having no remembrance of his father, except a small portrait, which he received from his mother, as an emblem of love and reverence, the growing boy passed the days of his childhood under the too severe training of a capricious tutor. The young Ling was afterwards sent to the schools of Wexiö for his further instruction. He was soon distinguished for his great talents, and his energy and devotion to study.

When Ling left the schools, he saw a new epoch of life before him; he found himself exposed to incessant vicissitudes, reduced at times to absolute poverty and the extremest want. During this period he resided for the most part in Upsala, Stockholm, Berlin, and Copenhagen; but it is not known in what manner he was employed. All we know is, that he studied at Upsala, and passed his theological examinations at Smaland, in December 1797; afterwards he was tutor in some families; at one time at Stockholm, at another in the country. Suddenly he left for Germany, and then went to Denmark. In 1800 he studied in Copenhagen, and the following year took part in the sea-fight against Nelson, as a volunteer in a Danish ship. He afterwards returned to Germany, and passed on to France and England, from whence he

\* Extracted from Rothstein.

returned to Copenhagen, with a perfect knowledge of the languages of these different countries.

During this period he received on different occasions military appointments, the details of which are unknown to us. It is said, that during his travels he was frequently reduced to the most trying circumstances, and had to endure the pangs of hunger. At one time he was glad to shelter himself in a miserable lodging in a garret at Hamburg; he was even forced to wash, with his own hands, the only shirt he possessed.

All these privations, however, did not depress him; although without means, the desire of continuing his travels, to develope and improve his knowledge, buoyed him up, and enabled him to surmount all difficulties. He was proud of his ability to endure privations, and to do without what are thought by others indispensable necessities.

The same impulsive energy which previously induced him to take part in a sea-fight, determined him to study the art of fencing during his second sojourn at Stockholm. Two fencing-masters, French refugees, had founded there at this time a fencing-school. Ling was there every day, and his great skill in this art was generally acknowledged; the more skilful he became, the more he valued it. He was now only at the commencement of that career which was already marked out for him, and which, from his own deliberate choice, he steadily pursued. His reflections upon fencing, and his own experience (for he suffered then from gout in his arm), taught him to appreciate the wholesome effects which may be produced on the body, as well as the mind, by movements based on rational principles, a circumstance that suggested to him a new and elevated idea, the full development of which could not be effected by fencing only.

This idea was, that an harmonious organic development of the body, and of its powers and capabilities by exer-



cises, considered in relation to the organic and intellectual faculties, ought to constitute an essential part in the general education of a people.

The realization of this idea now became his grand aim, the more so as he pictured to himself the brilliant image of mankind restored to health, strength, and beauty. Ling thought not, like his predecessors, of merely imitating the gymnastic treatment of the ancients, but he aimed at its reformation and improvement.

At this period of Ling's life begins that part of his history which for us possesses the deepest interest. Quite unknown, but attracting the attention of every one by his appearance, he made his *début* at Lund in the spring of 1805. Versed in several modern languages, and a thorough master of fencing, he began to teach them both, and being proud of all that concerned his fatherland, he lectured with enthusiasm on the old Norse poetry, history, and mythology.

In the same year he was appointed professor of fencing at the University, and began at once to re-fit the fencing-saloon of the University, and prepare it for several gymnastic exercises, which were commenced without delay. He soon excited the attention not only of the inhabitants of Lund, but of the other towns in the kingdom.\*

Ling wished to put gymnastics in harmony with nature, and began in 1805 to study anatomy, physiology, and the other natural sciences. His value for these studies, and the energy with which he pursued them, are forcibly expressed in his own words.

"Anatomy, that sacred genesis, which shows us the masterpiece of the Creator, and which teaches us how little and how great man is, ought to form the constant

\* During the vacations of the University he accepted invitations to different towns, and delivered lectures in Malmoe, Christianstadt, Gothenburg, etc.

study of the gymnast. But we ought not to consider the organs of the body as the lifeless forms of a mechanical mass, but as the living, active instruments of the soul."

It is plain that Ling looked on anatomy and physiology as the basis of gymnastics essentially necessary. According to his ideas, these and other natural sciences, as required and practised by anatomists and physiologists, were not at all sufficient for a gymnast, whose problem is the formation of man, and the ultimate aim of whose art is the *beau idéal* of humanity. He must, therefore, know what effects applied movements produce upon the corporeal and psychical condition of man, a knowledge which can be obtained only from an acquaintance with human nature, and the most careful and untiring examination.

Not only to himself, but to others also, must the gymnast be able to give an account of the application of his art. Ling has opened a new field for physical investigation, hitherto almost unknown, even to the most learned physicians and naturalists. He conducted his researches with the most scrupulous exactness, and frequently in the most earnest manner recommended his companions to do the same. He did not acknowledge a new movement to be a good one, until he was able to render to himself an exact account of its effects. His intention was to make gymnastics not only a branch of education for healthy persons, but to demonstrate it to be a remedy for disease.

This latter circumstance has contributed much to awaken the public interest in Ling's ideas, and to ensure for them the consideration of even such laymen as had always looked upon bodily movements as a deception, yet who in their sickness, anxious for the re-establishment of their health, were forced to seek relief for their ailments in these movements, and were not disappointed.

The curative movements were first practised in 1813, whilst Ling remained at Stockholm; but before this time they were not either disregarded or treated with neglect at Lund. Ling's inventions became known to the public long after they were made.

During his stay at Stockholm, a happy change for Ling's usefulness took place, which, from the improvement of his circumstances, extended itself more and more. At first he was appointed master of fencing at the military academy in Carlberg, near the Swedish capital. Soon afterwards he became the director of the Central Institution, founded at his own instigation. He projected such an establishment at Lund, and addressed himself, in 1812, to the Minister of Public Instruction, to obtain the support of the Government. He received the following answer:—"There are enough of jugglers and rope-dancers, without exacting any further charge from the public treasury." This did not at all diminish his energy, for after his arrival at Stockholm, he had the happiness (in consequence of the propositions he personally made, which were examined by a royal commission) to be appointed by a royal ordinance, with a regular salary of 500 rix-dollars, as the founder and director of this Institution, for the setting out and preparation of which not more than 200 rix-dollars were voted.

The latter royal ordinance, issued in the year 1814, states that the statutes proposed by Ling, and presented to the commission, were confirmed and legally fixed. Active and indefatigable, Ling continued the execution of his great ideas with such scanty means, and pursued it with a disinterestedness and self-denial, which can be attributed only to his enthusiasm for the cause, and to his patriotism and humanity. Not only by the zeal and circumspection with which he accomplished his duty as director, but by the manner he practised his art and taught it, the public were at last forced to acknowledge his merits, and the importance of the science he

taught. Although in the last days of his life he may have seen his task not quite accomplished, he was still enabled to enjoy a feeling of satisfaction, in comparing the degree of perfection his art had already attained with the state in which he found it at the beginning of his gymnastic career.

The important increase of public support which was accorded to the Institution in the year 1834, was certainly a mark of the increasing general sympathy conferred on him by his country. His sovereign raised him to the dignity of a Professor, and Knight of the Order of the North Star. He thankfully accepted both, but used neither the title of the first nor the insignia of the latter. He was much gratified by the proof of the love of his friends and pupils, when on a festive occasion they presented him with a silver medal. He had the deeper gratification of seeing his ideas realized, his art established in Sweden, made use of in every gradation of society, and incorporated, as it were, with the education of the people.

Ling's gymnastics were introduced many years ago, not only into all the military academies of Sweden, but into all town schools, colleges, and universities, even into the orphan institutions and into all country schools. In the rooms of the Central Establishment at Stockholm, persons of every condition and age, the healthy as well as the sick, executed, or were subjected to, the prescribed movements. The number of those who adopted the use of the therapeutic movements increased every year, and among them were even physicians who, in the beginning, had been the most opposed to Ling.

In the Central Institution clever teachers are educated, and no one obtains a diploma, or any authorization to the pædagogical practice of these movements, without having finished the course, and passed an examination in anatomy, physiology, and the bodily movements, which have become in Sweden a popular and necessary part of education.



In the year 1826, the Swedish authoress, Mrs. Ehrenström, said, "Sweden will never be able to acknowledge all it owes to the great art of Ling." She might have said this of the world at large.

We have mentioned that Ling, during his stay at Lund, lectured on the Norse mythology and poetry, and inspired great interest for both; being a true patriot, he wished to influence the moral education as well as the physical development of his countrymen. In the year 1812 he composed his poem, "The Gylfe," in fifteen cantos, which he re-wrote on a larger scale, in thirty songs, under the title of "Asame," published between 1816 and 1833. Another poem, "The Tirfing," and a series of dramatic poetry, the matter of which he took from the history of his country, with the intention of continuing it till the epoch of Charles XII., as well as his smaller lyric poems, were collected at a later period. It may be considered as a proof of the high esteem which he enjoyed as a poet, that he was elected a member of the Swedish Academy, a dignity which is only conferred on the most eminent Swedes. Of his smaller poems, several were set to music, and one of his dramatic works was performed on the stage.

Of his unwearied energy and his unceasing activity we can only form an imperfect idea. He had but few hours to spare for the enjoyment of domestic life, for which no man had a keener relish. It was with reluctance he ever wrote on the subject of his art; he preferred to practise and teach it. But he took pleasure in dictating his verses to his young friends; and it is recorded of him, that his flow of verse was so rapid, that they could not keep up with him, a thing which not seldom provoked an outbreak of impatience from the poet.

In his last years he suffered from severe bodily pains, which he endured with the whole energy of his will, and with humble confidence in God. During these



pains he finished his beautiful poem, "The Tifing," and composed two works, which contained the basis of the rules of gymnastics, and of fencing with the bayonet for the army. Notwithstanding his ailments, he walked almost every day throughout the summer from his country seat Annalund, to Stockholm, and performed there the most fatiguing labours. Even when on his death-bed he spoke till the last hour, and gave instructions about the science to which he had devoted himself during the greater part of his life. He died on the 3rd of May, 1839. The officiating clergyman said well of him at his grave, that few names were more entitled to a grateful memory than his, since we can scarcely appreciate all he has done for humanity and science; the happy consequences of his labours remain for future ages.

Ling was a man of high moral tone, pious, sincere, honest in all his dealings with his fellow-man. His intellectual powers were of a very high order; he loved with the same energy with which he worked, the objects of his home-affections, his friends, the poor, his country, and mankind. His life is another proof to be added to many illustrious examples, that learning, science, and genius shine most when associated with moral worth, generous affections, and piety. The best praise of Ling is that he was a genuine humanist.

Professor Branting at present is at the head of the Central Institution at Stockholm. His childhood was delicate, a circumstance which induced his father to confide his education to Ling (1814). At first he was merely a patient, but he soon became a disciple, assistant, and friend of Ling, after whose death (1839) he was appointed director of the establishment. Branting owes his life, strength, and health to the system of Ling. Endued with great natural abilities, and stimulated by the example of his teacher, he acquired the necessary fundamental knowledge, and contributed not a little to the ulterior development of the treatment by movements. In many cases we

are not able to determine whether most is due to the master or his excellent disciple. We trust Branting will publish ere long, for the benefit of suffering humanity, the results of his extensive practice, and the valuable observations he has made during more than thirty years. He owes this to the method of treatment over which he presides, to his own fame, and to the memory of Ling.

We must next mention Professor Georgii, one of the most able and industrious disciples of Ling. This gentleman had an excellent preparatory training, and is a first-rate anatomist and physiologist, and was for twenty-three years engaged in the study and practice of Ling's method. He is now settled in London, for the purpose of introducing this method of treatment to the medical profession and to the British public. I am indebted to him for much practical information, and for the readiness with which he has assisted me in the supervision of the plates which illustrate this work.

We must also make honourable mention of Dr. Liedbeck, a celebrated physician, of Stockholm, who, in conjunction with Professor Georgii, published Ling's *principles of gymnastics*. Drs. Retzius, Sundeval, Huss, Liljenwalk, Sonden. etc., are also in favour of this system in Stockholm. The Swedish Royal Medical Association at Stockholm has made a public acknowledgment of the high importance of the treatment by movements. The following is an extract from its report, dated 22nd May, 1849:—

“Many members of the Association, from the knowledge that the medical treatment by movements, according to Ling's system, has proved very effective as a curative means, and has *produced extraordinary and most satisfactory results in many chronic diseases*, are convinced that this method, developed with the scientific and practical clearness which is required for the adoption of any new medical system, and practised in harmony with other

medical sciences, under the special direction of, or in conjunction with, the physician, *will take a high standing in medicine.*"

We now pass to a rapid survey of the progress of this method of treatment in other countries.

#### IN RUSSIA.

A disciple of Ling, M. de Ron, introduced this system with the greatest zeal in 1837, and last year as it was proposed he should be decorated with the Order of St. Anne, the Emperor wished a detailed report regarding De Ron's merits, as well as regarding Ling's system, in consequence of which the Supreme Medical Board of Russia presented two reports, of which the following is an extract taken from a legalized copy of the official documents.

"The inquiry into the merits of the Institution of M. Ron was confided to two members of the medical council, to the state counsellors, Spaski and Sigorski.

"In this report they state that, notwithstanding M. Spaski has frequented this Institution as a patient during four months in 1847, and of course had an opportunity of experiencing the effects of the treatment by movements, and of becoming acquainted with the usefulness of the method, they still considered it their special duty to study it carefully, by frequently visiting the Institution, and impartially examining the treatment employed in different diseases.

"The following is the result of their careful observations. Notwithstanding bodily exercises, under the name of *Turnen*, were generally known and practised in Germany at the beginning of the present century, and many of its enlightened professional as well as non-professional writers tried to give to the *Turnen* a rational direction, by combining it with anatomy and physiology, Ling must be considered as the founder of the rational

system of movements, since in his establishment not only the theory and practice of movements, but also a perfect knowledge of anatomy and physiology was considered to be the indispensable basis of his system. To Ling, therefore, we are indebted for having established the more scientific principles of this important branch of education.

“We must add, that he and his successors at the head of the Institution of Stockholm particularly occupied themselves in employing this doctrine methodically, for the treatment of various diseases, basing it upon the physiological principle that the different movements of the human body, by strengthening the respective muscles, contribute not only to the improvement of disorders of the muscular system, but by promoting the circulation of the blood in the different parts of the body, they also prevent stagnation of the fluids, and by increasing the afflux of the blood in different more or less important organs, they change the nutrition and activity of the respective organs.

“In short, this doctrine is based upon the circumstance, that these movements are of such a kind as to produce indirectly very different effects upon our organism, effects which are more or less important, not only if considered with respect to their mechanical influence, but also with respect to all those cases in which health is disturbed in consequence of a sedentary life, or of a want of the necessary bodily exercises.

“The above will be sufficient to show the importance of rational gymnastics, and the essential difference between Ling’s school and the great number of those teachers of gymnastics, who, although instructing methodically, have no rational basis of instruction; that is, their method is not in harmony with the particular physiological conditions of our organism, and therefore cannot be employed in a diseased state of the body. Empirical gymnastics develop the muscular strength sometimes to a wonderful



degree, and teach the execution of movements, combined with an extraordinary effort of the muscles; by these means, instead of fortifying the whole body equally and generally, they often contribute to the development of the most dangerous diseases, since they do not teach the evil which the injudicious use of movements may produce, and in this respect the gymnastics resemble the medical empiricism which sometimes treats dangerous diseases with the best results, while it often produces the most unhappy consequences.

“M. de Ron arrived at St. Petersburg in 1837, and had the opportunity of practising the treatment by movements, with the assistance of some celebrated physicians of that town, and of giving instruction in movements for healthy persons. In 1839, M. de Ron was appointed, in the Military Institution and in the corps of the Imperial Guard, first professor of gymnastics. Since 1840 he has been at the head of the Institution in the Foundling Hospital, and in the battalion of Military Cantonists, and since 1842 in the School of Commerce. Subsequently M. de Ron has been authorized to make use of the Institution established for the corps of the Guard, for private lessons; in 1842, with the sanction of the Government, he established a gymnastic club; and at last, in 1846, opened his gymnastic establishment on a larger scale. In this Institution, in which two medical men, Drs. Bogoslawsky and Mjanovsky, are employed, 200 to 250 patients are every year under treatment by therapeutic movements, and it must be looked upon as the first establishment of the kind in Russia, since none of the other gymnastic institutions previously existing in St. Petersburg have had the immediate task of curing diseases by movements.

“All passive movements (those which are executed by an external agent upon the patient), as well as active ones (produced by the effort of the motory muscles), and the different positions with the aid of apparatus, or



without it, are practised according to a strictly defined method, and conducted rationally, since they are based upon mechanical as well as anatomical and physiological principles. Experience teaches *us the usefulness of this Institution, as many persons treated by movements have recovered their health, after having suffered from diseases which could not be cured by the ordinary remedies.*

“We must also mention the written testimony of Dr. Bogoslawsky, who himself, after having been cured in that Institution of a chronic disease, has practised diligently these movements for five years, and who, being appointed consulting physician to that Institution, has since then had opportunities enough of observing and witnessing numerous cures.

“From the foregoing facts, the medical council has come to the conclusion that the activity and practice of M. de Ron, the founder of the first establishment in Russia for the cure of diseases by movements, in which many persons have completely recovered their health, or at least obtained some relief, by means of that important therapeutic accessory, deserve all encouragement from the Government. At the present time, all learned men agree that bodily exercises, methodically practised, are necessary to every one from childhood, in order to develop regularly the strength of the body, as well as to promote robust health. The practice of these movements at an advanced age is of the greatest importance for those who are in the public service, in which a robust, agile, and a well-exercised body is required, in order to undergo the fatigues of military life.

“Nobody can doubt that all these movements must be limited by physiological considerations, that is, that they must be based upon the physiological laws of the human body, in order to prevent the most dangerous consequences. It is decidedly right and desirable that a particular consideration should be granted by the Government to such an important branch of physical education as

gymnastics, and to ensure instruction in it by well-taught and judicious teachers. This object would be attained by establishing a similar Institution to the one in Sweden, which, under the inspection of the Medical Board, would serve to educate rational gymnasts and good assistants, and where at the same time medical men would have an opportunity of becoming acquainted with the principles of gymnastics in general, and of their special application as a remedy in diseases, things which, according to the opinion of the Board, deserve the greatest attention from the profession.

(Signed) "Dr. Markus, President of the Medical Department in Russia.

"B. Pelikan, B. Richter, N. Arendt, P. Lange, A. Sagorski, members of the medical council, and eleven gentlemen who are consulting members of the same department.

"St. Petersburg, 9th March, 1849."

With respect to the undeniable usefulness of the treatment by movements, the Medical Board states that it is based—

"1st. Upon the actual state of physiology, which having proved the indisputable effect of movements, not only on the development of muscles, but also on the functions of the single parts of the body, and particularly on the circulation of the blood, recognises the possibility of contributing by movements to the development of the organism, as well as to the removal of various predispositions to diseases. Physiology shows also the injury and even the fatal dangers produced by merely empirical gymnastics, without any physiological base.

"Besides all these facts, having considered the advantage and the generally-acknowledged importance of a physical education, as well as the dangers proceeding from an injudicious instruction in gymnastics, afforded by teachers

deficient in the indispensable knowledge; and, on the other hand, seeing the utility of gymnastical treatment in several diseases, a treatment *which in some cases decidedly deserves a preference above all other methods*, the medical council could not neglect the opportunity of expressing their inmost conviction regarding the advantages and importance of founding a central establishment, in which patients could obtain access to the method of treatment by movements.

(Signed) "B. Pelikan, A. Richter, N. Arendt, P. Lange, T. Spaski, C. Mendt, A. Sagorski, members of the medical council, and seven consulting members of the same Board.

"St. Petersburg, 19th May, 1849."

This acknowledgment of the treatment by movements from the first medical authorities of the Russian metropolis, had the good result of procuring from the Emperor a grant of 10,000 roubles for the establishment of a provisional Central Institution in Petersburg, till another on a larger scale can be founded.

#### IN GERMANY.

Ling's writings were first mentioned in 1830 by Dr. Maaszman, of Magdeburg, who translated, in 1847, Ling's works on gymnastics.

1844. Dr. Eckhard, of Berlin, published in the "Medicinische Zeitung" an article respecting the Swedish Central Institution, which he had personally visited. In the same year, another article by a Prussian, Lieutenant Rothstein, appeared in the "Staat" (a periodical edited by Dr. Wöniger), which at last induced the Prussian ministry to send M. Rothstein and another gentleman to Sweden, to examine personally Ling's system.

1845. Dr. and Professor H. E. Richter gave a public lecture in Dresden on Ling's movements, before the Medical Society of that city. This interesting lecture was pub-

lished under the title, "Die Schwedische nationale Gymnastik," Dresden, 1846.

1847. Rothstein published a part of his great and instructive work, "Die Gymnastik nach dem Systeme des Schwedischen Gymnasiarchen, P. H. Ling," which was finished in 1849. We are indebted to Rothstein for many observations which he made during his official sojourn, under the kind assistance of Director Branting and Professor Georgii.

Rothstein's great merits in regard to Ling's system are not only theoretical but also practical; he has been appointed by the Prussian Government, Director of a Central Institution at Berlin, in which, as in that of Stockholm, students are to receive the necessary scientific education, and healthy persons as well as patients to be treated by movements.

Dr. A. C. Neumann, physician to the district of Graudenz, in Prussia, published in the "Med. Central Zeitung" some very interesting articles about the medical treatment by movements, according to Ling, which are to be found in the numbers of that Journal for 1847—48, and in Casper's "Wochenschrift," of 1849 and 1850.

Dr. Neumann introduced the movements into his private practice, as well as into a hospital under his care. We have translated the most important results of his experience, and look with great pleasure to the publication of a work on spinal curvatures, from his clever pen, in which, as he kindly wrote to me, he intends to show the important part effected in cures by the scientific employment of movements.

The example of this gentleman induced also some other medical men, as Lindenhay and Kuntze in Graudenz, Sauer in Garnsee, and Leupold in Lessen, to make use of this method of treatment, of which they soon became very zealous partisans.

In the "Organon of Physiological Therapeutics," published some months ago by Dr. and Professor Richter, in Dres-



den, a long chapter is devoted to this treatment; but we are sorry to say that the author confounds the *Turnen*, hitherto used in Germany (the ordinary unscientific gymnastics), with the highly developed system of Ling, which has the great advantage of being capable of a still higher theoretical and practical development, depending entirely upon the progress of physiology and pathological anatomy.

We have availed ourselves of many interesting notices mentioned by Richter, in order to give as complete an account as possible of all that relates to the treatment by movements.

#### IN FRANCE.

Several years ago, Professor Georgii endeavoured to make this method known at Paris, by the publication of his "Kinesitherapie," and by showing practically the beneficial results of these movements in the treatment of diseases.

The Minister of Public Instruction, Salvandy, had already made, some years previously, the necessary preliminary arrangements for introducing Ling's doctrine into France, but these were put a stop to by the late French revolution.

#### IN ENGLAND.

Messrs. Ehrenhoff and De Betou, two Swedish officers, introduced, in the year 1845, Ling's system into London. Each of them published a little pamphlet, in order to call the attention of the professional world to this system.

Last year, Professor Georgii published his "Kinesiotherapy," and began at the same time to propagate Ling's ideas practically.

The author of the present treatise has made use of all the above-named works, published in different languages, as well as many others, in order to impress on medical men the importance of this doctrine.



The observations on cures of various diseases by movements without a scientific basis, before the time of Ling, are to be considered as belonging to the historical part, but we prefer placing them after the chapter on the treatment of diseases by movements.

## CHAPTER II.

### DOCTRINE OF MOVEMENTS.

*The subject of this doctrine is the human organism, considered by Ling as a whole and existing for itself, consisting of life, vital power, and substance; the vital phenomena of which are subordinate as well to physiological as to physical laws in general, and are only ideally arranged (that we may better understand them) in three principal orders, known as the Dynamical, Chemical, and Mechanical agents.*

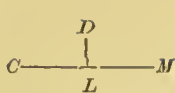
To *dynamical* phenomena belong the manifestations of the moral and intellectual powers of the mind, sensibility, etc.; whose immediate material organs are the cerebral, spinal, and ganglionic systems, and by the vital activity of which these phenomena are manifested.

To the *chemical* belong generation, nutrition, reproduction, sanguification, secretion, etc., produced by the vital activity of the different glands and glandular organs, the lymphatics and blood-vessels, etc.

To the *mechanical* belong the spontaneous as well as the organic movements, as for instance, breathing, circulation, walking, etc., produced by the vital activity of the lungs, muscles, etc.

We say that the distinction is only ideal, because no vital phenomenon of one order is manifested without being more or less in combination with one or more of another order; and only the union and harmony of the three combined constitute a perfect organism.

This harmony has been very ingeniously represented by


 Ling, in the diagram of a scale, in which *D* shows the dynamical, *C* the chemical, and *M* the mechanical agent: *L* is the life in its highest development, and the first point from which the three principal agents begin. If we suppose *C* and *M* to be continually in the same horizontal plane, and *D* in a vertical one, forming upon it, at the point *L*, a right angle, we have the idea of a perfect organism, which in reality never exists; therefore we can represent the state of *relative health*, by a continuous and scarcely sensible alternating balance of the two points *C* and *M*. If one of the points *C* or *M* be more or less high or low, the balance of the organism is changed, and we have *the image of malaise, indisposition, weakness, and disease*.

Sometimes these three lines, representing the three principal agents, do not appear to be in any contact (that is, their activities, although present, are not perceptible to our senses) in the point *L*, which represents *the state of apparent death*. The simultaneous real separation of the three lines in *L* is death; while their first combination in this point presents *the beginning of life*.

As the different vital agents can only act by their mutual co-operation and by their common vital power, it is very evident that if in the healthy state this power be more or less employed in one or two of the three agents, this must necessarily have a certain influence upon the third, which will manifest itself by an irregular activity, and hence produce *malaise*, weakness, or disease. Could we possibly direct this vital power in the diseased state to act more or less on one or two of these agents, then we must admit the possibility of influencing the third, and thereby restoring health. This mutual harmony of the vital manifestations has long been known, as also their relative influence upon the vital power; and accordingly all telluric influences were divided into—1st, *dynamical*, as light, heat, electricity, magnetism, etc.; 2ndly, *chemical*, as nutri-

ment, medicine, poisons, etc.; and 3rdly, *mechanical*, as a shock, pressure, etc.

But there are many external influences which act simultaneously on all three vital agents; therefore, according as they influence chiefly one or other of the three, we have dynamical, chemical, and mechanical curative means. In admitting these three principal varieties of vital activities, together with so many corresponding modes physiologically affecting the organism, each of which is in its sphere of equal importance, we consider the therapeutic system incomplete in which all these powers are not taken into consideration. Hitherto it has been principally by medicines acting generally on the chemical agent alone that we have tried to preserve health and to cure disease; the dynamical and mechanical agents have been either entirely neglected or unscientifically considered.

As the different phenomena produced by the vital activity suppose a certain movement in the organs, we purpose in the following pages to demonstrate principally the influence of the mechanical agent.

“The law of movements is founded upon nature; no chemical action can be effected in the organism without the participation or assistance of the mechanical acts, which are expressed by involuntary movements. As, for instance, oxydation of the blood (a chemical action) cannot take place without the motion of the respiratory muscles, which is a mechanical one; digestion, assimilation, etc. (chemical acts), cannot be performed without *mechanical* movements of the stomach, intestines, and some other muscular organs. The blood cannot be thrown to every part of the organism, here to be oxydated, there to nourish, or perform other chemical functions, without the contracting and dilating movements of the heart. In fact, throughout the entire organism, movement is engendered by movement.”

Ling finds the following analogies:—“I. Between the three fundamental agents of the vital powers and the

kingdoms of nature, in which the dynamical is represented by the animal, the chemical by the vegetable, and the mechanical by the mineral kingdom. The first, the forms of which are spherical, shows itself as well by its large central apparatus—heart, liver, brain—as by the will and higher dynamics.

“The second, with cylindrical forms, like the bowels and vessels, bound to its existence by space and time, takes up into intimate union with itself other substances, and thus has a chemical character.

“The third, having partly lineal, partly crystalline polyhedral forms, shows its life only under the narrowest condition of cohesion, etc., subject to the same limits as the mechanical agent, the line and the lamellæ.

“II. The three zones may also be compared with the three principal forms of the human organization. The torrid or chemical is subject to the greatest changes, has the most varied diversity of colouring, and the wildest species of animals and men. In the frigid or mechanical there is least difference of colouring and the fewest changes; great darkness and mighty mountains, with the least number of animals and men. The temperate zone, the dynamical, undergoes moderate changes, and in population, habits, and artistic skill occupies a medium between the other two.

“III. The three vital agents appear to bear an analogy also to the three principal systems of the organism, as well in respect to the periphery as to the centre. The brain is the principal organ of the nervous system, which seems to represent the dynamical form. The chemical is represented by the heart and lungs—the centre of circulation—together with the liver and spleen. The arms, legs, with their larger muscular apparatus, embody the mechanical form.

“IV. The three temperaments have also a certain analogy with the vital forms; the sanguine corresponds to the chemical, the phlegmatic to the mechanical, and the choleric



to the dynamic. The melancholic or nervous temperament is not independent, but only an unequal combination of the foregoing, and more like a certain form of disease. Although we believe that the temperaments depend only on cerebral relations, still they answer to the three cardinal vital forms, which are only the shaded expressions of life, combined with the substance.

“V. Production, assimilation, and evolution are also analogous in a certain degree to the dynamic, chemical, and mechanical agents; because the *first* may be considered as the latent *efficient* power of nature; the *second*, as an incomplete development of the organic forms; the *third*, as the highest development of the same forms during the different periods of life.”

We have thus seen that the three principal vital agents are only different expressions of life, and that they cannot exist independently of one another, because they are only ideal factors of the same force, which, ceasing to act in harmony, produces indisposition and disease. It would therefore be very capricious, in such discordant action, not to consider which of the three agents must be principally acted upon. Hence it would be very wrong to treat a feverish patient, in whom the mechanical agent shows itself already in the greatest preponderance in an accelerated circulation of blood, by violent movements of the respiratory organs, or by a forcible shaking of the limbs. But as the chemical agent is as inseparable from the mechanical and dynamic, as these latter are from the former, *hence it must be impossible to effect a cure in all diseases solely by pure medicines which act principally on the chemical agent.* Wherefore medical men frequently prescribe either exercise influencing the mechanical, or amusement, etc., acting by means of the dynamic agent. In such cases, where the state of disease remains unchanged and the insufficiency of exclusively medical (chemical) treatment being evident, it is clear that not this, but one of the remaining agents, is the means by

which the health is to be restored. It is as wrong to recommend a healthy person only to eat and drink, and not to move nor amuse himself, as it is in diseases to act exclusively on one factor of the vital power.

Having thus explained the bodily diseases, we will proceed by the aid of the same diagram to develop the psychical.  $L$  is the representative of life, which, as something infinite, can neither be diminished nor increased. The vital power showing itself in the three different directions, undergoes change both in quantity and quality; the second is more visible in the chemical and mechanical agents at the points  $C$  and  $M$ , while the quantity of the vital power is manifest by the line  $LD$ . By its greater or less length, its direction to the point  $L$ , and its varying form, we can express the different changes of the dynamic agent, developing themselves as mental and other nervous diseases. We can easily conceive that the quality and amount of the vital power change, and must exercise a mutual influence upon one another; and that, according to this greater or less action, the development of diseases will be visible in one, two, or in all three directions in which the vital phenomena are produced.

#### INFLUENCE OF MECHANICAL AGENTS ON OUR ORGANISM.

The influence of mechanical agents on our organism is not generally admitted, an opinion which is a necessary consequence of ignorance. We have already observed the influence of dynamical agents on our organism, and the changes as well in its chemical as its mechanical form. We also know that the chemical action is capable of acting from within outwards, as we see, for instance, in the food producing an uniform deposit of the parts necessary to the body, on its most peripheric points. In the same way, we must admit the possibility of an influence on the internal parts produced by an

external mechanical agent, because how could we otherwise explain the serious and fatal consequences of a fall, shock, etc. The following will show more explicitly the mode of action of the mechanical agent.

Whatever exists in our body, either as a part of it or as a foreign substance, must at a certain moment have a definite shape; therefore every change of the space in one part necessarily produces a corresponding one in the surrounding tissues—a change that is thence propagated to the most remote parts of the body, and which depends, with respect to its form, upon the amount of the alteration produced by the first movement. However inconsiderable may be the angle produced either by the position of the body itself or by an external agent upon a vessel, nerve, tendon, muscle, etc., a change is necessarily produced in the parts adjoining, which diminishes in the more remote tissues, as undulations from any cause, in air or water, finally disappear. Usually, if this angle happen to be originated in the more important portions of a nerve, muscle, etc., the corresponding change will be greater according to the largeness of the angle, which becomes more sensible after every shock, or external force, directed upon elastic parts: all others, being inelastic, do not permit the external forces to form an angle which is directed inwards; they receive the immediate shock and break, because at the same time they resist, the external force. Experience teaches that different trades and arts act differently as well on the internal as external being of those who are engaged in them. Many trades have power to change the bodily proportions of those who learn and execute them; and this even though the workman have ceased growing before he enters upon the occupation. Commonly there is developed a hypertrophy of single muscles, bones, textures, whole limbs, and even of such internal organs as are principally exercised by the trade; while such parts as are kept continually during the occu-

pation of the trade in a state of inactivity become emaciated, and begin by degrees to waste away. Partial movements, repeated thousands and thousands of times, increase the reproduction in single organs, and thereby produce the greatest changes, even the most perfect metamorphoses in external and internal organs. If, on the contrary, the state of rest is too long protracted, the absorption in the inactive organs is predominant, and the reproduction ceases either for the most part or entirely. Hence it follows as a natural consequence, that when a limb has become crooked from a partial exercise of its muscles, the curvature would be cured, if the weakened antagonists are exercised as often and to the same amount as the preceding, which must now rest for a period proportionate to their former exercise. A healthy organ daily exposed to continued pressure emaciates and atrophies. So it is very natural that parts which by disease have become hypertrophied, will also by the same means lose their increased volume. The least pressure upon a nerve irritates it, if increased it becomes painful, one still more intense benumbs it, and if the pressure be very violent and sudden, the nerve is paralysed. If this were not the case, a violent shock, stroke, heaving, etc., could not become fatal, but would only destroy the nearest tissues.

The mechanical agent has also an extensive (quantitative) influence; for too early or excessive exercise, that is, more than the body can support according to its age, constitution, etc., puts a stop to growth in the youth, and causes weakness. Our general custom of doing all with the right arm produces a greater development of its bones, whilst those of the unused limbs become weaker. Therefore, only right and well-used movements are really beneficial; while those used improperly and misapplied, as at present in most gymnastic or orthopædic institutions, as well as neglect of movement or inactivity, are each in the same manner followed by bad consequences.



DIFFERENCE BETWEEN THE TREATMENT BY MOVEMENTS  
AND THE ORTHOPÆDIC TREATMENT.

There is a method of treatment—the orthopædic—which is often improperly confounded with the treatment by movements. This has arisen possibly from both appearing to have a solely mechanical action; in the former, however, this is produced by a machine or other inanimate apparatus, in the second by the living organism itself, either alone or assisted by another living organism, or any external agent. In the first, the vital reaction is not generally taken into consideration, while in the latter, this becomes the basis of the treatment, which the external influence is but the agent to provoke. Thus it is that generally in the common orthopædic treatment, no cure can be effected without injuring, more or less, another organ. We feel it our duty to call the attention of the professional and lay readers to this subject, because, without denying the successes of orthopædic treatment, the question is, whether by exchanging one disease for another, which is so often worse, we do not pay too dearly? In the treatment by movements we make only a momentary use of any external apparatus, and never employ in diseases of the trunk stretching instruments; these are sometimes employed only as accessaries in contractions of single muscles of the extremities, and even then not constantly. The subjects of orthopædic treatment by instruments are principally those curvatures of the spine and limbs which result from a contraction of the muscles of one side, with relaxation of those of the opposite.

In order to show the immense difference between Ling's method and the orthopædic treatment, Neumann quotes the present views on contraction and relaxation (erroneously called paralysis), as they are based on the latest discoveries of physiology and pathological anatomy.



With respect to the motor nervous filaments, their innervation is excessive and continual during the contraction, they are, as it were, incessantly loaded; during relaxation the innervation is too weak and even entirely lost; the contracted muscle no longer relaxes itself, because it is not constrained by its antagonist. The molecular state and the elasticity are considerably altered in the contracted muscles, while the molecules in the relaxed muscles are more in their original state, merely obeying physical laws, and the elasticity is predominant. We have further physiological proofs that a muscle, exercised by alternate contraction and relaxation, becomes stronger; that is, not only does the innervation increase in its motor nervous filaments, but the muscular fibres also increase in number; whilst, on the contrary, in the unexercised muscle, their number diminishes, and instead of them, fat is deposited, and a tendinous structure developed. The muscle which is contracted for a longer time, wastes its muscular fibres like that which is relaxed, but with this difference, that they are replaced in the first by a tendinous, and in the second by a fatty structure. By this contraction of a group of muscles on one side, and by the relaxation of their antagonists on the other, great changes are produced in the bones, ligaments, arteries, veins, and lymphatic vessels, as well as in the synovial membranes, and in the parenchyma of the organs of adjoining cavities.

How can we suppose that such vigorous changes, not merely of external form, but also of muscular structure, bones, and all other organs, are to be cured by the purely mechanical action of an apparatus, which can only repress the prominent organic parts, and forcibly extend the contracted muscles, without permitting the development of the curative reaction of the vital power. The treatment by apparatus alone can therefore be useful only in very small curvatures of the limbs existing but for a short time, because the muscular relaxation is not largely developed, and therefore the extension of the contracted muscles

(although but little affected by the apparatus) still allows to the weakened antagonists, in some degree, a more vigorous contraction, which, continued for a longer period, may possibly have some effect. But when a change of texture in the muscles, bones, and internal organs has taken place, particularly if there is a substitution of fat and tendinous masses, no cure can be effected by the use of machines alone. Thus we see that many of those patients who undergo the torture of lying horizontally upon stretching-beds for years, or of wearing the different pressing-girdles, after all, still retain their curvature, which is diminished, if it be so, at the expense of some other organ.

The operation of *tenotomy* (division of tendons) has considerably increased the number of cured curvatures, and chiefly those of the limbs, as club-foot. In spinal curvature it has not succeeded so well, either because muscles were cut through which are seldom or never contracted, or because it is very often impossible, and even for the most clever surgeon too dangerous, to divide the whole of the contracted muscles. At first the effects of tenotomy were sought to be explained by assuming the formation of an intermedial substance, and it was believed that the extension of the tendon is the effect of the stretching apparatus employed after the operation. Pathological anatomy has proved by facts that this opinion is not at all well founded, and the effect is now explained by the contracted muscle becoming *vivified* through the division of its tendon. This perhaps may more readily be understood by the fact that the ends of the tendon in the most strongly-contracted muscle are, immediately after the operation, still more contracted, and only approach each other at a later period; therefore, a still greater contraction (that is, an increased molecular change) of the contracted muscle must take place, after which, in obedience to the laws of elasticity, relaxation ensues.

The knife, by affording the possibility of this move-

ment, which is similar to the ordinary ones, does not then only vivify the contracted, but also the weakened or relaxed antagonist muscle; for as that which is contracted begins to be influenced by the law of elasticity, in the same proportion will the weakened antagonist produce molecular changes in itself, and thereby become more capable of resisting excessive elasticity. This explanation is confirmed by experience, because the muscle the tendon only of which is entirely severed, is still capable of contracting itself; hence, only the entire cutting through of it is successful in practice. The intermedial substance is not only unnecessary, but even injurious, as Dr. Neumann has observed, in many cases. It is therefore so far from being injurious, that it is on the contrary very advantageous, chiefly because it facilitates the cure, to replace the crooked limb immediately after the operation as much as possible in the crooked position, and to retain it by suitable bandages. We still observe, as soon as the wound is completely healed, that, notwithstanding this position, the curvature is less after the operation than before.

The subjects of the treatment by movements are not only those of the orthopædic treatment, but also many internal diseases, as we shall have opportunities of showing in a subsequent section.

In the treatment by movements, we want neither the torturing machines nor the knife in order to cure such curvatures. When these are the consequences of muscular contraction, they are successfully treated by increasing absorption in the hypertrophied and contracted muscles, by *passive* movements, and, by stimulating the arterial circulation, innervation, and reproduction in the antagonists by means of specific *active* movements. By this change of the activity in muscles, which are antagonistic to each other, the secondary pathological changes in the ligaments, cartilages, bones, and other internal organs, disappear by degrees. It is even possible, by perseverance in a long-continued treatment of this kind,

to restore to a healthy soundness the diseased muscular texture, which by the too long contraction had become disorganized, and was replaced by tendinous and fatty deposit, which process is quite impossible in every treatment by apparatus alone, because these can only influence the external form, without ever producing a salutary metamorphosis of the internal organs.

Neumann says: "In my opinion, we commit a sin towards diseased youths by torturing them with stretching-beds, on which they must lie the whole day for a long time, with compressing corsets, and machines, or generally employing such a curative method, entirely opposite to all the doctrines of physiology, which could be excused in a former period when physiological knowledge was in its infancy; but now, it is really a disgrace to medical science, if professional men, who wish to be looked up to as scientific persons, consider the human organism merely as a lifeless mechanism, which they can press like wax in a machine, then extend, and finally give it a suitable form. We do not speak to those ignorant persons who wish to deceive people by expensive machines, but to the scientifically educated, professional orthopædists, and call upon them to examine impartially the system of Ling."

#### DIFFERENCE FROM THE ORDINARY GYMNASTICS.

Between the treatment by movements and the ordinary gymnastic treatment, the important difference is, that in the latter only active movements on machines are used, and these but empirically, without the necessary anatomical and pathological basis, consequently not only in general without any success, but even sometimes followed by worse consequences; again, the so-called methodical gymnastic treatment, tried only to cure external malformations in their commencement, and was never employed in internal diseases.

#### OBJECT OF THE DOCTRINE OF MOVEMENTS.

The doctrine of movements, in the sense in which Ling



uses this word, teaches us, on the basis of physiology, anatomy, and psychology, to bring the human body, both as to its different material particles as well as its intellectual faculties, into harmony with its presiding laws, the expression of which harmony is the state of health.

#### DEFINITION OF MOVEMENT.

By the word *movement*, in a medical and hygienic sense, is to be understood, every change of position and difference of form, determined by time and amount, in the whole body or in any part of it, and which may be produced by the organism itself, or by any animate or inanimate mechanical agent.

#### DIVISION OF THE DOCTRINE OF MOVEMENTS.

As we intend to show the beneficial influence of movements in the normal and abnormal state, the subject may be divided into two parts, hygienic and medical, having the closest relationship with each other.

1. The *hygienic*, which should form, as in Sweden, an essential feature in our general education, comprehends the healthy development of the body, and, by strengthening the system where constitutionally weak, the prevention of many diseases.

2. The *medical*, or that treatment of diseases in which movements are the sole curative agent, or form a very important accessory.

#### LING'S DIVISION OF THE DOCTRINE OF MOVEMENTS.

The doctrine of movements has been arranged by Ling in four principal groups, according to the state of the organism, and its relation with the external world.

1. SUBJECTIVE-ACTIVE STATE, which supposes the organism to be acting upon itself with its own force, for the purpose of self-conservation and development. This is the base of the

( $\alpha$ ) *Pædagogical part*, by which we learn to subject the body to the influence of our own will, and by which the



natural disposition to harmony in its various parts is developed.

2. OBJECTIVE-ACTIVE STATE; in this the action is the result of a combination between our own force and one that is external, which latter is striving to bring on a reaction. This is the base of the

( $\beta$ ) *Military part*, by which we learn to subdue by the assistance, either of external means (as weapons) or of our own bodily force, another will external to our own; here the oneness of the body and the weapon are developed proportionately to the action of our opponent.

3. SUBJECTIVE-PASSIVE STATE; here the organism is in an abnormal or diseased state, during which we are less able to act ourselves, but must remain passive, and receive a mechanical influence from without. This is the base of the

( $\gamma$ ) *Medical part*, by which we learn to allay or cure our pains and disorders, either of ourselves by a convenient position of the body, or with the assistance of others, acting upon us by movements; whereby the harmony which had previously been deranged by the respective irregular proportion is restored in the different parts of the body.

4. OBJECTIVE-PASSIVE STATE, in which we express, by outward actions, our feelings and impressions. This is the base of the

( $\delta$ ) *Æsthetic part*, by which we express actively our internal being, our thoughts and feelings, thereby showing the harmony which exists between our intellectual and corporeal being.

The knowledge of the different so-called artistic movements necessary in certain trades and arts is not taken into this account, because their subject is not an equal development of all the parts of the body, but a development of certain parts only for a particular art, trade, etc.

#### GENERAL DIVISION OF MOVEMENTS.

All movements of the living human body are organo-mechanical, and at the same time subject to both phy-

siological and mechanical laws. We do not agree with those who pretend that our body, while passive, obeys only mechanical laws, because even in apparent death from suspended animation, which is, in our opinion, its most passive state, the so-called organic laws still exercise an influence, although their action is not perceptible to our senses.

The organo-mechanical movements in our organization are either *invisible* or *visible*. The first are manifested only by their effects, like the unobserved movement produced in the iron wire by electricity, but of which we are, notwithstanding, convinced by the deviations of the magnetic needle. Among them we include all the functions of the vital power, the mind, intellect, sensibility, and the material organs serving as the dynamic agents in our organism, the brain, and the whole nervous apparatus, which functions, as is generally known, show themselves materially—that is, mechanically—in their effects.

The *visible* movements are of various kinds, and are arranged as follows:—

1. *Internal organo-mechanical*, which necessarily belong to nutrition, assimilation, reproduction, etc., which are involuntary; as the motions of the heart, blood, and lymphatic vessels, the respiratory, peristaltic, and plastic movements.

2. *External organo-mechanical*, which are subjected to the volition, and belong to the locomotion or *musculature*; that is, to the faculty by which we move, under the influence of our will, either the whole body or some of its parts, or that faculty by which, notwithstanding the interference of gravitation, we preserve the equilibrium of the body. This class of movements is subdivided into the following classes:—

- ( $\alpha$ ) *Intentional movements*, produced only by a very clear and determined expression of the will; every work of art and trade is but the result of a well-arranged series of movements, which had been previously well considered and definitely willed.

( $\beta$ ) *Customary movements* are executed only in the first moment by our will, and by their frequent repetition are produced without its continual influence; if we wish their discontinuance, even for a short time, a strong effort of will is required, and also this is often in vain. Instances of these are found in the different movements of certain trades; the sucking of their thumbs by children, even years after they have been weaned; masticating movements of soldiers and sailors, who are accustomed frequently to chew tobacco, which they continue, even though they have nothing in the mouth, belong to this class.

( $\gamma$ ) *Reflex movements* are produced without the influence of our will, by a particular stimulus acting on sensitive nerves, by which it is conducted to the central axis, and from this reflected upon motor nerves; as, for instance, sneezing, coughing, the contraction of muscles after a shock or stitch, etc.

( $\delta$ ) *Sympathetic movements*, are those which involuntarily occur simultaneously with such movements as we wish to execute, or which we see done by others; as, for instance, the sympathetic finger-movements in persons who begin to play on stringed instruments; yawning and laughing, if we see others do so, are likewise examples of this class, which may even be produced by the action of internal influences, as in hysterical persons.

( $\epsilon$ ) *Emotional movements*, such as are caused by some mental impression, as anger, grief, or joy.\*

( $\eta$ ) *All pathological movements*, including *irresistible*. If the muscular power or faculty of moving the whole body, or a part of it, is not at all influenced by our will, and the movements executed in a regular manner still continue, then these are said to be irresistible.

Again, if persons suffering from similar irresistible movements wish to execute a movement, and this is done in an irregular way, or accompanied by others which are

\* During the movements mentioned under  $\beta$ ,  $\gamma$ ,  $\delta$ ,  $\epsilon$ , the will does not exercise its influence.

both unnecessary and irresistible, these are called *irresistible* and *irregular* movements; or, according to Bouillaud, *muscular madness*, or *mad musculation*.

Dr. Roth,\* of Paris, in a recent work on the subject of irresistible muscular action, or irregular chorea, divides the irresistible movements into those which act either on the whole body or only on some of its parts, as in the well-known twitching movements of tic.

By general irresistible movements, the whole body can be moved or equiposed in the most differing ways—forwards, backwards, round its perpendicular or horizontal axis by rhythmical jerks, both irregular and regular.

If the power of moving the whole body or a part of it, shows itself neither voluntarily nor involuntarily, we have the image of *paralysis*, in which the influence of the will or the power of motion ceases entirely.

#### GENERAL EXPLANATION OF MOVEMENTS.

Every movement used in a treatment must be a definite movement, which consists of—

- ( $\alpha$ ) Commencing position.
- ( $\beta$ ) Intermediate position.
- ( $\gamma$ ) Final position.

Every definite movement has a definite form, and hence must have definite points:

- 1. In which it begins.
- 2. Through which it passes.
- 3. In which it terminates.

*The commencing position* is obtained either by our voluntary power alone, or by the help of external mechanical means or assistants, and is that from which the movement originates.

The direction of the movement shows the *intermediate*, and that position where the moved body returns to a state of rest is the *final* position.

\* Histoire de la Museulation irrésistible, ou de la Chorée anormale. Baillière, Paris, 1850.



In the active movements, with external resistance or assistance, the commencing position is where the assistant begins to be in a moving contact with the patient, or, in other words, where the latter begins to receive the assistance or resistance of the external agent acting upon him.

In the passive movements, where the body, or a part of it, is always considered as moved by an external agent, the commencing and terminating positions are where the external force begins and ceases to act.

#### CLASSIFICATION OF MOVEMENTS.

*Simple Movements.* A movement is *simple*, the action of which propagates itself only upon one articulation, or, according to others, which is apparently executed only by a certain part of the body. In reality, such a simple movement does not exist, because in every one a greater or less number of parts is engaged either actively or passively.

In practice we also call a movement simple, if a leg, or an arm, or trunk, considered as a whole, is moved with respect to a particular articulation.

*Compound Movements.* A movement is *compound* when its effect is propagated at the same time by degrees on two or more articulations ; or, according to others, when it is apparently executed by many parts of the body. Such a movement can be executed, either so that one part of the body only is active, the rest being passive, or that all the parts of the body participate in the movement, as, for instance, in leaping, running, etc.

*Double Movements.* With respect to the division of our body into symmetrical halves, we have *double movements*, which naturally occur in the limbs only.

*Half-Movements.* The word *half* is used in order to designate a movement, or position, which is to be executed only with one arm, or one leg, the lower or upper part of the body, etc. ; as, for instance, *half-extended standing* is performed only with one arm ; *half-standing* is the standing position on one leg ; *half-lying* is the lying on the upper or lower half of the body. The word *half* always



indicates that movement expressed by the word to which it is prefixed, and is to be executed with one limb or part only, as, for instance, the *half-extended standing* and the *extended half-standing* positions are entirely different; because, in the first, we extend one arm upwards and stand on both feet, whilst in the second, we extend both arms upwards, and stand on one foot.

*Parallel Movements.* Where several limbs or parts are moved at the same time, with a common purpose in view, the movement is said to be *parallel*; as, for instance, the pass in fencing, a friction on both sides of the throat or chest, are parallel movements.

*Partial Movements* are those which all influence, in the same or a similar manner, some determined parts or organs of the body, and which are executed either as the exclusive or predominant movements.

*General Movements* are those which influence in the same manner the whole body or the majority of its parts.

*Repeated Movements.* When one and the same simple or compound movement is executed several times in succession, at short intervals, the whole series is called a repeated one; as, for instance, walking, which is the same movement of the feet following one another, repeated after every step. Climbing, weaving at the loom, hammering hot iron upon the anvil, the execution of a shake in music, etc., are repeated movements.

*Rhythmical Movements.* When these repeated movements are executed at determined equal intervals, they are said to be rhythmical. Every repeated movement can therefore become rhythmical at will, or by custom, as is seen in the marching of troops.

*Movements in Motions (tempo).* The movements in definite motions differ from the rhythmical; the latter are repeated in a determined rhythm with the same limbs, while the first, not being repeated movements, are executed neither with the same limbs, nor at equal intervals of time, which may be longer or shorter, un-

limited by a definite law as in the rhythm. The same difference in fact exists between them, as between a verse metrically spoken and a speech pronounced in detached syllables.\* The possibility of a movement in motions is given by the articulated forms of our body; it occurs if one part of the body moves in sensibly shorter or longer intervals, and when two or more parts of the skeleton are moved at the same time, while the rest of the also equally moving limbs are put in action after a sensible interval. We distinguish the single partial movements, concurring to compose the collective movement, according to the order in which they follow each other in the series, by indicating them as first, second, and third motions, etc. Motions executed in a certain time are of great importance in the movements, not, as might be imagined, because they are more elegantly executed, but that such a motion directs the attention of the mind to the sense of order, which sense is formed, exercised, and developed by a movement in motions. This psychological influence and importance of the motions has been appreciated, though without being generally understood; for so long as they do not become habitual, they operate beneficially; by inducing the will to act upon certain parts, the effect of which is a greater local innervation, and consequently better organic development. It is known, that if the attention of the mind be directed to the movement of a certain organ, there ensues a greater innervation and afflux of blood, and if it be too long continued or too intense, even congestions, hypertrophy, etc., are its pathogenetic effects. Again, paralysed limbs have been often improved, even cured, by acting upon them merely by the will, the influence of which becomes sensible in the increased power of motion.

\* The articulation of the words is indeed a movement in motions, of certain muscles and other parts of the throat and chest; every syllable pronounced is one motion, and a word articulatedly pronounced is a movement composed of several motions.

*Quantity of Movement.* The idea of quantity refers to the whole movement with respect to its continuity, extension, and intensity.

With respect to its *continuity*, the movement is—

1. Equal.
2. Increasing.
3. Diminishing.
4. Increasing and diminishing.
5. Diminishing and increasing.

In *extension*, the movement depends on the form of the articulations upon which it acts, as these determine the limits between which a movement is possible.

The *intensity* of a movement depends as well on the strength of the individual as upon the end to be attained by a certain movement; the rapidity and force employed during a movement can alter its intensity from the lowest to the highest degree.

#### DIVISION OF MOVEMENTS WITH RESPECT TO THE MOVING POWER.

The movements are divided, with respect to the moving power, into active, passive, and combined.

*Active movements* are all those which are executed by the special activity and determination of the moving person; they are always produced by the muscles subject to our will, which is alone the moving agent, and are the result of the organic contractility, influenced by our will.

*Passive movements* are those which are executed neither by the special activity nor by the special determination of the person, but either by living or inanimate external agents, which are alone the moving power. There are instances in which the person himself makes with one part of his body a movement, acting like an external agent on another entirely passive part of his own body, for which reason such a movement must still be considered as passive; as, for example, if one hand makes upon the leg a friction, pressure, or any other movement.

*Combined Movements.* We call those movements which are the result of our will and an external force *combined* movements, and divide them—according to whether the movement originates in our special will, or in the external force—into *combined-active*, and *combined-passive*, movements.

A movement is *combined-active* when we begin a movement of our own will by ourselves, while the external force acts either in the same direction, and by its assistance the movement is more easily executed, or while this acts in an opposite direction, and renders, by its resistance, the execution of the intended movement more difficult. In the first case we employ less, and in the second more action; for which reason these *combined-active* movements are divided into *less-active* and *more-active*. A *combined-passive* movement is that which begins by the action of the external force, while we act by our will either in the same direction, by which assistance the external agent acts less upon us; or while we act in an opposite direction, by which resistance the external agent must more strongly influence us. In the first case we call it *combined-less-passive*, in the second *combined-more-passive* movement.\* These *combined-less-active* and *combined-less-passive* movements are almost equal as regards their effect, with this sole difference, that in the former the movement is in the first moment determined by our own will, and in the latter by the external agent.

The *combined-more-active* movement was named by Neumann *duplicated concentric*, probably because it is a combined movement, and the external agent, by its resistance to the direction previously intended by our will, keeps our muscles longer in a concentric state. We have adopted in the treatment of diseases the expression *active-passive*,

\* As the term *passive* may occasion some confusion, I consider it necessary to be somewhat more explicit. In using the term *passive*, reference is invariably made to an external agent, though this is in itself really *active*.



to designate this movement. The *combined-more-passive movement* he calls *duplicated eccentric*, because the external force endeavours to hold our parts in a more eccentric state. We have adopted the term *passive-active* to express this movement.

In the *combined-more-active* or *active-passive* movement, the external force must be employed according to the degree of strength of the person acted upon ; and must, although it slightly resists the direction of the movement, still be less than our own force by which it is to be overpowered.

In the *combined-more-passive* or *passive-active* movement, our will, although it tries to resist the external force, still must give way.

*Mixed* movements are those in which a part of the body is passively moved while another is active.

In illustration of the difference between these movements, let us take, for example, a flexion of the lower arm towards the upper, which is executed in the following ways:

1st. The individual furnishes by his own flexor muscles the motive force, he himself being active ; he also determines the quickness and form of the movement, which is in this case an *active* movement.

2nd. The individual neither furnishes the motive force, nor directs the speed and form of the movement ; but any external force acting on the arm flexes it, which movement is *passive*.

3rd. If the individual, by his flexor muscles, furnishes the motive force at the commencement, and an external force immediately assists the execution of this flexion, it is a *combined-less-active* movement.

4th. If the person intends to move his arm in a certain direction, while the quickness and form of the movement are regulated by a second person, or by any other external force, which by holding the lower part of the arm would offer any resistance to the first person, then this movement is a *combined-more-active*, or *active-passive*.

5th. If another person begins to flex our arm, and we



immediately promote by our will the execution of this movement, it is a *combined-less-passive* movement.

6th. If the person does not flex the arm himself, but resists, by calling his extensors into play, an external force producing such a flexion, and thereby himself determines the quickness and form of the flexion, the movement is called a *combined-more-passive*, or *passive-active*.

7th. If we move actively any other part of the body, while the arm is passively flexed, we have an idea of a *mixed movement*.

#### DIVISION OF ACTIVE MOVEMENTS.

1. Active movements which are produced by an entire muscle or a portion of it, or by a group of definite muscles, are called *special-active* movements.

2. All other active movements are called *general-active* movements, that is, they are not executed by a special group of muscles.

3. Active movements are executed, either freely, without the help of any technical apparatus, or with such assistance. The first are called *free movements*, the second *movements on machines*.

*Free* movements are executed either with or without the assistance of one or more persons; and they present the following great advantages:—

1st. That the movements being very simple, are easily understood, as well as readily employed.

2nd. They can be executed at the same time by a great number of persons; hence much saving of time is effected, and as a necessary consequence of this, and the absence of all apparatus, a considerable diminution of expense.

3rd. The free movements can be executed in any place, as well in the open air as within doors, even in a room the performance of these exercises is not at all restricted.

4th. The free movements induce an agreeable feeling

of ease in our ordinary carriage, promoting, far more than the movements on machines, a good posture of the body, together with an appropriate appearance and deportment.

5th. By a sufficient number of assistants, many of the movements on machines can be executed as free movements.

#### GENERAL EFFECT OF MOVEMENTS.

*The effect of a movement is the result of its action and the reaction of our organism.* As our body is not only material but also organic, *the effect is consequently physical and physiological* at the same time, that is, depending upon the laws of mechanism and life.

*The physical effect* shows itself by all changes of the proportions of the space and form of our body, as well as by the change of the substance itself.

*The physiological effect*, to which belongs also *the psychological*, is manifested by all changes in the activities of the vital power of our body, by the state of the whole organism, especially of the vascular and nervous systems. The infinite difference in the effects of movements upon the body is perfectly evident, since we feel from some the greatest ease, from others the greatest pain; we may observe that a slight friction produces only the very least change of the form, whilst a blow may act so strongly that the organic reaction may be extinguished, even in the most powerful constitution, and the destruction of the bodily life be the inevitable consequence.

It is known that giddiness, trembling, perspiration, nausea, appetite, drowsiness—or in simple parts of the body, swelling, congestion, inflammation, stiffness, etc., follow after certain continued movements and positions.

*The psychological effect* is also a necessary consequence, as the *psyche*, or animal life, affords the organic reaction by which it must change its condition. We see, therefore, that a movement producing giddiness

alters for a time the psychological condition ; excessive movements produce not only the feeling of fatigue on the body, but also psychical relaxation ; on the contrary, moderate movements produce the feeling of comfort and good humour ; a violent concussion of the head deprives us of consciousness, the pain produced by certain movements and accompanying the material effect, shows also how the *psyche* is affected.

#### HYGIENIC, PATHOGENETIC, AND THERAPEUTIC MOVEMENTS.

With respect to the effect of a movement on the regular state of the body, it is—

1. *Hygienic*, if it contributes to preserve the healthy state of the body, and so develop harmoniously all its strength.

2. *Pathogenetic*, if it tends to generate indisposition or disease.

3. *Therapeutic, or medicinal*, if it helps to change a diseased for a healthy state.

*Specific Movements.* According to its effects a specific movement is one, the primary action of which influences only a certain organ, or a limited group of nerves, vessels, and muscles, and the duration and rhythm of which are also limited ; as the will of the patient or an external force, or both produce it, such a movement is called a *specific active, specific passive, or specific combined* movement.

*Effect of Movements in general.* Movements act either directly on the whole nervous system in general, or on single parts of it, which action is effected by the direct stimulus resulting from the movements, and is transmitted inwards.

Well-employed active and passive movements act on the nervous system, by increasing or diminishing the general or local circulation of the blood, and by their manifold effects on our senses ; as for instance, on the eyes, by an active rotation of the head, or by a horizontal peripheral move-

ment ; on the ears, by more or less intense vibrations of the air produced by the human voice or by instruments ; on the touch, by compression, ligature, etc. These primary impressions produce many secondary effects by sympathetic and reflex actions, and influence also the substance of the nerves, the size and density of which are materially altered ; we have, here, proofs in the different organs of the brain, which are more developed by their greater activity, as is known to every phrenologist who has made practical observations in this science. Active and active-passive movements have an important psychological influence, because single functions of the brain become more or less active ; the influence of the will, courage, firmness of character, etc., are increased ; on the contrary, too violent passions are diminished by the suitable application of movements.

The reflex actions of bodily movements, besides influencing the mental faculties, and acting derivatively on the nervous centres, tend to the development of feelings and sentiments, which express themselves in appropriate forms, and thus influence the mind favourably, and so act curatively in mental diseases, such as hypochondriasis, some forms of hysteria, melancholy, madness, etc.

#### EFFECTS OF ACTIVE MOVEMENTS.

The effects of active movements are very different in their character, because every muscle alone, or more of them, can be combined to perform the manifold movements ; consequently the effects are either general or local.

*The general effects of active movements are—*

1. All functions are accelerated in an astonishing manner.

2. The brain exercises a greater nervous influence on the motory nerves, by which its activity is also more considerable. The innervation and will are more intensely conducted from the brain to the respective motory nerves, on which these movements act as a stimulus ; at the same

time they are derivatives from the central organs, partly by increasing and exercising the activity of the peripheric nerves.

3. The activity of our senses is considerably increased, because active movements necessarily call into play the senses themselves.

4. The innervation of the motory filaments of the nerves of the muscles is increased, and by these means a transformation of the texture of the nerves, and a strengthening of the motory nervous power is produced. In the exercised muscles not only are innervation and circulation of the arterial blood increased, but also the change of the substance and the waste of the muscular fibres is accelerated; the secondary effect of which is an increased size of the muscles.

5. The motory nerves being more influenced, the receptibility of sensitive nerves is diminished.

6. The reflecting action of the motory nervous filaments upon the filaments of the sympathetic nerve, and by this upon the organic muscles, is also influenced; but we do not know as yet the laws by which and by what movements of the muscles this is to be done.

7. The arterial blood is conducted to all parts of the skin and muscles, immediately after the cessation of the contraction of the fibres, while during this contraction, the course of the blood is momentarily retarded.

8. The venous blood and the fluid of the lymphatic vessels are in an increased state of movement during the contraction itself.

9. Many muscles being moved at the same time, the formation of blood is in general increased, because, with the induced stronger movement of the blood, also a better mixture of it is produced, and generally the oxydation of the blood increased.

10. The fibrous texture is in general more developed, on account of the absorption of the lamellous texture, which almost entirely disappears in the interstices of the muscles.



11. The texture of the heart obtains a greater force in persons accustomed to active movements. By sympathetic and reflex movements the breathing and pulsation of the heart are increased, and simultaneously the venous blood is rapidly driven to the right heart by the pressure of the muscles; consequently, the circulation of the blood in general is increased, as well as congestion to the capillary vessels of the lungs produced.

12. The mechanical, chemical, and dynamical phenomena of the respiration follow each other with greater rapidity; the exhalations of the lungs and the expiration of carbonic gas are increased.

13. The increase of temperature varies from one to two degrees.

14. By the primary effect the appetite and thirst are sometimes lessened, by the secondary always increased, and the movements of the stomach and intestines become stronger. Active movements before dinner excite the appetite, while they disturb it if executed during digestion, because the food passes through the intestines so rapidly, that no nourishing particles are absorbed. The experiment upon two dogs, one of which remained quiet, while the other was fatigued by movements, is known; the latter being killed a certain time after dinner, had no food in the stomach, because it passed undigested into the bowels, without any of its parts being absorbed; while in the other dog, the food was considerably changed, and still in the stomach.

15. An effusion of *plasma*, and therefore a greater reproduction is produced in the muscles. The reproduction consists not only in the nutrition of the existing muscular fibres, but also in a real reproduction or formation of new fibres.

16. The size of the muscles is considerably increased, as shown by the so-called herculean forms of active labouring people.

17. The secretion of the synovial membranes is con-

siderably increased, as well as the cutaneous perspiration, which, according to Schultz, is charged with the products of waste, and smells particularly.

18. The secretion and excretion of bile are increased by the pressure on the liver, effected by the contraction of the abdominal muscles.

19. The urine becomes less, is deep-coloured, and contains much uric acid as colouring substance (Richter).

20. All other internal secretions are diminished.

21. The bones are in general more developed; the prominent parts, as well as the depressions, destined for the insertion of the muscles are increased. The form, the direction, the combination of the bones are changed, by which the whole skeleton improves, as we see in the swelled form of the thorax, in the prominence of the ribs, the better position of the pelvis, etc., etc.

22. The functions of the sexual system are in general less stimulated, but their strength increased, although certain active movements may produce quite the contrary effect.

23. The active movement of the muscles is, according to Ling, equal to a bleeding with respect to its effect, with this difference, that the arterial blood undergoes a metamorphosis, and that only some of its component parts are removed from the organism, while by the bleeding, the detracted blood leaves the body, with all its constituent parts, entirely.

24. If the movements are performed too quickly one after the other, with too great energy, and for too long a time, instead of increasing the circulation, they produce a greater stagnation, even decomposition, of the blood.

#### LOCAL EFFECT OF ACTIVE MOVEMENTS.

As every active movement has a special effect, particularly belonging to it alone, besides the general one, common to many or to all muscles of the body, this local effect is consequently different, according to the function

of the part which is more or less influenced ; unfortunately we are but little advanced in the knowledge of these effects, which will be mentioned, as far as they are known, after the description of single movements. If we wish the special local effect, we must make use of specifically active movements, which is the case principally in orthopædic cures. If we wish to increase temperature, the better formation of blood, and the derivation of blood, we can choose amongst many active movements having a similar effect.

*The special effect of a local active movement is—*

1. To put in activity every single muscle, or only a part of it, or a group of muscles.
2. To increase locally the afflux of arterial blood.
3. To increase the innervation or cerebral influence upon the nerves, which influence is often but an emanation of our will.

#### EFFECTS OF PASSIVE MOVEMENTS.

The effects of *general passive movements* which act on the whole body, like driving in a carriage, navigation, swinging, are—

1. They strengthen without exciting, and distribute force and energy equally on the whole body ; they give to men more life, without increasing its activity, and without shortening its duration.

2. The intellectual exaltations are more allayed.

3. The lamellous texture is predominant, while the fibrous becomes less firm.

4. Fat is deposited in greater quantities between the muscles, and under the skin, by which the form becomes more round.

5. The shock produced by passive movements acts also on the nutrition of the lungs, the parenchyma of which is increased.

6. The greatest part of the internal secretions are a little increased, excepting that of the synovial membranes.

7. The digestion is better and easier, because in a person while under the influence of the slight vibrations and pressures of passive movements, the peristaltic action of the stomach and the absorption of nourishing parts of food are considerably increased.

8. Too many passive movements produce an increase of the activity of the assimilating organs, and a kind of atrophy in the muscles, which make men less suitable to locomotion.

9. The effects of all passive movements are to be compared, according to Neumann, to that of pressure on the tender, the hard, and firm parts of the organs of the body. If we consider, for instance, a passive rotation of the arms, which consists in this, that while one individual leaves the muscles of his arm in a passive state, a second person holds this arm, and moves it in such a manner that it makes a circle with the hand; even during this movement, all organs of the arms will suffer such a vibration, as if they had been pressed with the hand of a second individual. Under similar passive influences, the external skin, the muscles, the cell-texture, and the fibrous covers, even the periosteum, the bones and the arteries, veins, nerves, and lymphatic vessels lying between and in these parts, obey only physical laws, and are pushed aside by such a movement, and mechanically pressed towards each other. The continual tone of the muscles and of the integuments, as well as the vital reaction of the organs, must naturally always modify these physical laws; in this manner we are able to explain the other passive movements by the simple effect of pressure and vibration. Every pressure excites the lymphatic absorption, and produces, if continued longer, the decay of the organs, and the removal of all foreign masses and deposits which are effused and situated between the organs.

10. A passive movement is therefore also to be compared to a bleeding, with this difference, that by these means a metamorphosis only of the blood and other matters is pro-



duced, and nothing is detracted completely from the body, as is the case in an ordinary bleeding; this is the reason that, by passive movements continued for a longer time, an organ may be very much weakened, even emaciated; while from the rest of the organism, nothing or only as much is detracted as the function of that organ contributes to the harmony and welfare of the whole.

*The effects of local passive movements* in general are—

1. Changes of the functions which are peculiar to the different organs, which at first are local, till their influence is propagated to more remote organs; this primary action is generally followed by a secondary one, which may influence the whole organism, or a certain part of it.

2. The local and primary action manifests itself by the increased or diminished activity of the constituting primitive parts, as the epithelion, the ends of the primitive nervous fibres, the capillary and lymphatic vessels, contractile cellules and fibres, and secretory glands.

3. The epithelion-cellules get more numerous, become harder, or disappear after continued pressure, friction, etc.

4. The sensations of the sensitive primitive nerves are qualitatively changed, as for instance, the itching becomes, by friction, burning, instead of cold we feel warm, pains disappear by friction, etc.

5. The motory nerves are stimulated or paralysed, according to the degree of the external mechanical influence; but at any rate, their activity must be in a certain manner also influenced by the reflex action of the sensitive nerves. This reflex action is mutually between the motory and sensitive nerves, but unfortunately, physiology is not yet sufficiently advanced to show us its laws.

6. The capillary and lymphatic vessels are either contracted or expanded. In the first case, the circulation of the blood, and consequently the absorption, are increased; in the second case, the circulation is slower, the expansion increased, and if this expansion is continued for a longer time, even congestion and inflammation are produced.



7. The contractile textures may become either hypertonic or atonic, and produce collapse or turgescence. The secretory and excretory glands become active and their functions increased, which contributes much to general health. This local effect may be conducted on to more distant organs, either by the contiguity of the parts, or by the nerves and the blood. In the first case, it is done merely mechanically; in the second, dynamically, by reflex, sympathetic, and antipathic phenomena, and by the blood; these movements seem to act in the beginning mechanically, but they have also a chemical influence.

*The special effects of local passive movements are—*

1. To stimulate the innervation in the sensitive nervous fibres by kneading, pulling, etc.
2. To allay pains, by frictions, vibrations, etc.
3. To increase the reflex action towards the part on which it primitively acts.
4. To soothe the motory nerves.
5. To equalize the action between the sensitive and motory nerves.
6. To increase or diminish locally the course of the venous blood and lymphatic humours, as well as local congestion, exhalation, and absorption.
7. To increase moderately the local nutrition.
8. To transform, retroform, and dissolve morbid products.
9. To restore the form, position, and direction of the parts, as well as the mobility of the articulations.

The time in which the secondary effects of the movements appear, or in general the reaction produced by a passive movement which acts, by increasing the venous absorption, is much shorter than that which follows a movement on the nerves, and produces greater activity in the arterial capillary vessels.

THE EFFECTS OF COMBINED MOVEMENTS *are to be compared either with those of active or passive movements.*

For the following article on the effects of combined

movements, I am indebted to a private communication from Dr. Neumann.

The effects of *duplicated concentric*, according to Neumann, or active-passive movements are, besides those of active movements—

1. The innervation is more excited.
2. The afflux of arterial blood is lessened during the movement, and increased after it.
3. The circulation in the veins is increased, and the veins themselves emptied. These three effects are all in a higher degree than in active movements.
4. All organs in and on the muscles, especially the *fasciæ*, are folded together during the movement.

The effects of *duplicated eccentric*, according to Neumann, or passive-active movements are—

1. The innervation is excited.
2. The afflux of arterial blood increased, even during the movements, because the arterial blood-vessels become straighter.
3. The course of the venous blood is not only not increased, but on the contrary diminished, because the veins become longer, and their contractility is relaxed.

4. The *fasciæ* are strongly extended, but equally.

The active-passive (duplicated concentric) movement corresponds to a compression, and the passive-active (duplicated eccentric) to an extension, of the organic tissues. This effect differs from a compression and extension produced by external mechanical agents upon us in this, that in the one case it is performed equally, in the other unequally.

#### THE EFFECTS OF SPECIAL-ACTIVE, SPECIAL-PASSIVE, OR SPECIAL-COMBINED MOVEMENTS

vary according to the organ acted upon; it is therefore impossible to give an exact enumeration of these effects, as long as we are unacquainted with the different conditions and changes of our organism, produced by the immense

variety of positions and movements to which our body is exposed in the different occupations and trades ; here the great work is to be done, which can only be executed when the results of many careful observations, to which every physician has every day the opportunity of contributing, shall be collected.

#### NATURAL INDICATIONS OF A TREATMENT BY MOVEMENTS.

*Movements are natural curative agents in many diseases.*

The voluntary as well as the involuntary movements act in a most extended manner, as preventing, allaying, curing, and suppressing diseases ; which they do either as derivative for the sensitive nervous parts, or by their neutralizing the bad effects of external injuries, partly by effecting a more favourable position of diseased parts, partly by removing fluids from the body, especially by inducing the excretion of injurious matters, and by increasing or diminishing absorption and reproduction. We may consider the muscular system in general of an equalizing nature, by which the nervous centres, previously excited and overcharged by influences acting on the sensitive nerves and senses, are discharged and become free.

In the healthy state the brain expresses its sensations and ideas by muscular action, and so it does also in diseases ; we quote for instance, the often-increased muscular movements, which we execute during a pain or any other disagreeable sensation, as the contortion of our countenance, different movements of the limbs, the jolting, the jerking, the yawning, the extension of the extremities, etc.

Patients in delirium or mania soothe themselves by speaking and violent movements ; afterwards they are more quiet. Again, we see patients soothed, and the cure ameliorated by their voluntarily suspending muscular action, by this or that position, and rest of the body, or

of any part of it; for instance, the quiet position of a fever patient, the raised or stooping position of an asthmatic person, the elevation of an inflamed limb, etc.

The morbid reflex movements, as the spasms, are partly known as so-called critical symptoms; a complete evolution of the paroxysms, for instance, in epileptic persons, contributes sometimes to a less frequent return of the fits, and to a more prolonged stage of intermission. A mixture of voluntary and reflex movements is found in the expulsive efforts, which are so decidedly important to the preservation and restoration of health, and even to the protection of life; sneezing, coughing, vomiting, etc., belong to this category, as well as the inspiratory and expiratory movements, viz., yawning, sighing, laughing. The rhythmical and peristaltic reflex movements of the hollow muscles, the tonicity of contractile textures, the oscillatory movements of some mucous membranes, are so well known to be indispensable for the transmission of their contents, as well as for the preservation of the nutritive processes, that it is superfluous to give numerous examples of their importance in the healthy state. The increased movements of the heart lasting for a while, are, although not the sole, yet the principal and essential reason of the curative power during a fever process, which influence has been known since the most ancient times. The slower movements of the heart are, on the contrary, the material reason of the cessation of dangerous fevers, and therefore afford a possibility to an increased absorption, and a salutary reproduction. Even the lowering of the movements of the heart during a fainting becomes curative in exhausting bleedings, as well as the intervals between the movements of the uterus after violent pains in childbirth, which often contribute to restore the strength for a following uterine contraction.



## DEEP BREATHING.

The importance of deep respiration is not as yet sufficiently appreciated. Deep breathing not only expands and strengthens the respiratory organs, but regulates the circulation; it purifies the blood by freeing it of its hydrogen and carbonic acid, and other noxious matters; it lowers its temperature; it supplies the indispensable oxygen; conditions all so requisite for the right mixture of the blood, and thereby fitting it for healthy nutrition.

It prevents the general as well as the local accumulation of fat, the development of the yellow hypertrophy of the liver, of gall-stones, fat-degeneration of the muscular substance of the heart, etc., etc.; of the venous-hypnotic crisis, as the cyanotic, abdominal, arthritic-hæmorrhoidal, and also the tuberculous.

By augmenting the pulmonary exhalation, deep breathing contributes to the excretion of the volatile parts, with which the blood is mixed in many cases, as the alcoholic, ætheric, volatile-narcotic, and other substances, perhaps also of animal volatile contagia, of the principium uricum, etc.

As the emphysema, œdema, tuberculosis, and hypostatic inflammation of the lungs are generally connected with an irregular respiratory movement, according to the recent pathologico-anatomical researches, hence deep breathing is, in all these diseases, very useful, as well as for the preservation and restoration of a healthy activity of the innervation in the central organs and muscles. The exhalation during strong movements, and the breathing of a greater quantity of air, diminishes the warmth in healthy persons, and furthermore in fever patients, acts by moderating and diminishing the movements of the heart. The smallest air-cellules in the parenchyma of the lungs are more dilated, by which the deposit of tuberculous and other matters is prevented in them. Pathological anatomy

indicates a natural or artificial emphysema as the only radical means against tuberculous deposits.

Deep breathing acts by its improving the blood, lowering its temperature; by at once tranquillising and strengthening the psychical, sensitive, and reflex actions, the spirits are awakened, the courage increased, and the general *tone* improved. The artificial passive imitation of the respiratory movements, by blowing in air, by alternative compression of the cavities of the chest and abdomen, by kneading, heaving, etc., is used as a popular means in the complete stagnation of the circulation of the blood, in apparent death, in asthmatic fits, etc. We observe also a reflex action of the state of our mind on the respiratory movements. We see that joy and courage increase the movements of the respiratory organs, which are diminished by a depression of our mind. We never see a man with a flat thorax, high or prominent shoulders, or other irregularities of thorax, in possession of great courage. Many poets show, by the description of their heroes, that this observation was not unknown to them, as well as to the old painters and sculptors.

*Expiratory movements*, such as coughing, sneezing, vomiting, retching, etc., are natural curative means, by which solid, half solid, and liquid matters are removed from the respiratory and other organs.

The danger of a fatal termination in many diseases of the respiratory organs is caused by the impossibility of expectorating, or of an expiratory movement, as we see in croup, bronchitis, pneumonia, and affections of the mucous membranes of these organs, as asthma, tuberculosis, etc., etc. In the single fits of whooping-cough and asthma, a stronger expiratory movement finishes the paroxysm, by excretions of mucus from the smaller bronchial trunks.

Piorry observes very justly, that every smallest bronchial branch is to its surrounding cellules the same that the trachea is to both lungs. If this is shut, the respec-

tive pulmonary vesicles cease to arterialize the blood, which partial loss of activity, being analogous to a paralytic suffocation, propagates itself in proportion to the increasing frothy or slimy secretion on the other parts of the lungs, till a general cyanosis or suffocation begins. Hence the importance of the expiratory movement.

All machines and instruments lately known as inspirators and tube-respirators, are useful only by their necessarily obliging the patient to breathe according to a determined rule; but as we prefer to employ our remedies according to the individuality of the case, we reject all similar instruments, and prefer the respective movements acting on the inspiration and expiration according to the state of the disease.

*Sneezing.* The concussion of the respiratory organs produced by sneezing had been employed for a long time as a curative means, and is even at present believed to be a salutary symptom at least by the people, which gave rise to the origin of the expression *God bless you*, which is very old, and mentioned by Xenophon. In infants and children, who sneeze easier than cough, this movement is more frequent.

Sneezing avails—1. In diseases of the nose (cold) for the excretion of mucus, congealed matters, strange substances, and the expulsion of the moist exhalation of the mucous membranes of the nose.

2. For the more copious secretion and excretion of tears, by which the epithelion, mucus, pus, and other matters, are taken away from the nasal and conjunctival membranes.

3. In a catarrh (cold) of the eustachian tube, which is often a symptom connected with a cold, involving the head in what is called “stuffing,” the sneezing appears to prevent the propagation of the cold to the ear.

4. Sneezing avails particularly in colds affecting the frontal sinuses.

5. It serves, in attacks of giddiness, numbness of the head, depression of the mind, fainting, asphyxia, apparent death, as an awakening means on the brain and spine.

6. It is useful in order to promote the excretion of the membranes and strange matters in croup, and diseases of the larynx.

*Cough* is indispensable to the expectoration, to the transformation of mucus into a frothy matter, so that it may be expectorated, and to prevent suffocation, because without the tickle of the cough, our life would be in constant danger; the vesicles of the lungs are more expanded, the expiratory muscles of the thorax and abdomen are exercised, the circulation of the blood, in the lesser circulation, is increased, and it serves as a stimulus for the brain and spine principally in narcotic suffocation and apparent death.

*Vomiting* is a movement composed of many groups of muscles, in order to produce an expulsion of the contents of the stomach and upper part of the intestines, the œsophagus and respiratory organs, an expulsion of the mucus from all these parts, compression of different glands, especially of the liver and gall-bladder (which during the vomiting are squeezed like a sponge), of the pancreas, the glands of the throat, and of the lower part of the lungs.

It produces muscular effort in almost all the voluntary muscles, with a hard, strong reaction on the movements of the heart, on the frequency of breathing in congestions of blood to the head and chest, on the respiration, and is often accompanied with very dangerous consequences, as ruptures of vessels, prolapsus, hernia, congestions, etc. It produces different reflex actions on the brain and spine, as exciting alternating concussions, depression of the mind by nausea, and even by its secondary effect, sleep and fainting.

It effects secondarily increased excretions of saliva, bile, sweat, urine, etc., and changes in the nutrition and assimilation.



Vomiting is often a natural curative agent, in many persons, by which the overcharged stomach is easily and without any inconvenience freed. We often see this in babies; hence the general opinion that children who vomit occasionally are generally more healthy.

The cases in which vomiting has been used as a curative agent we need not mention, contenting ourselves with indicating the following movements which produce it, as circular frictions of the stomach, circular turning of the body round its longitudinal axis, the Russian swing, sea voyages and boating, the horizontal circular movement, etc.

*Mastication* has, besides its physiological effects of mixing the food with saliva and preparing it for the digestion, curative and allaying effects in toothache, paralysis of the masseter muscle, and incomplete ankylosis of the jaw.

#### GENERAL AND SPECIAL INDICATIONS FOR TREATMENT BY MOVEMENTS.

The recommendation of movements without particular indications is very injudicious, for we know from their physiological effects that what is useful to one may be noxious to another. Medical science makes use of movements on a very extensive scale, and in a diversified manner.

The general indications for the treatment by movements are the same as for any other treatment.

1st. We must know what is the object of the treatment, and

2nd. What is its aim.

The special indications for the treatment by movements are—

1st. Restoration of the right shape and form, as for instance, of curvatures, etc.

2nd. Restoration of the right position and direction of the parts, as for instance, of ruptures, etc.

3rd. Restoration of the mobility of the parts, as for example, incomplete anchylosis.

4th. Removal of solid and liquid matters, and foreign bodies from the cavities and textures of the body.

5th. Restoration of nutrition, assimilation, and reproduction of the whole body or single parts.

6th. General change of substance, principally of the muscular fibres.

7th. Increase of the activity of the skin, lungs, heart, liver, etc.

8th. The diminution and increase of the activity of the nervous central organs.

9th. The alleviation of pains.

#### GENERAL INDICATIONS FOR ACTIVE MOVEMENTS.

To the general indications of active movements belong the prevention of the greater development of many very frequent diseases, particularly of tubercles, scrofula, abdominal plethora, scurvy in prisons and ships, chlorosis, curvatures of the spine and limbs, of all morbid consequences of excessive sensibility, muscular weakness, accumulation of undigested food, of hypochondriasis, hysteria, and some mental diseases.

In the beginning of the above-mentioned diseases active movements serve as curative, and not only as preventive means. In both cases they must be applied on an anatomico-physiological basis, and not, as is now the case, by mere empirics, who, like other quacks, employ their nostrums indifferently in every disease, without any rational basis, with no other intention except that of filling their pockets by the credulity of ignorant and foolish people. Unfortunately I am obliged to make a similar reproach to the greater part of professional men, who, prejudiced by their old and false ideas, do not like to study new doctrines, and who prescribe also, but only empirically, exercises to their patients without knowing their effect, and without mentioning the form, the

intensity, the time, and quantity of movement necessary in each disease; therefore Rothstein very justly observes, that we require in every stable-keeper to whom we confide the care and dressing of our horses, a knowledge of the animal's anatomy, physiology, and veterinary therapeutics, so that he may be able to fulfil his duties; but the man who is intrusted with the development and strengthening of the human body, is not expected to possess as much science as is deemed absolutely necessary in the trainer of horses; and he in general knows neither the anatomical forms of our frame, the physiological functions of our organs, nor the influence of the movements upon our body. The same reproach, with respect to the latter point, we must also make to medical men.

#### SPECIAL INDICATIONS FOR ACTIVE MOVEMENTS.

The active movements are used, in order—

1st. To strengthen and fortify a muscle; that is, to form new and stronger muscular fibres.

2nd. To remove the fat texture, which has been substituted for muscle.

3rd. To effect a stronger innervation of the motory nerves.

4th. To increase the temperature.

5th. To promote the formation of arterial blood in general, and improve its mixture.

6th. To derive blood, principally the arterial, from neighbouring organs.

7th. To effect a better formation of venous blood, and an increased circulation of it, as well as of the fluid of the lymphatic vessels, not only in the muscles, but also in more distant regions of the body.

8th. To relieve the contraction of certain muscles by strengthening their antagonists.

9th. To establish, by the returning equilibrium of the antagonists, the re-formation of the texture of the ligaments, tendons, cartilages, bones, and even of internal organs.

## INDICATIONS FOR PASSIVE MOVEMENTS.

Passive movements are used therapeutically.

1st. In hypertrophy of the different organs.

2nd. In pseudo-formations.

3rd. For the removal of the products of inflammation.

4th. In dilatation of the veins.

5th. In disorders of the valves of the heart.

6th. In muscles and tendons, which have been contracted but for a short time, in which the muscular power is to be weakened by the increased resorption.

In case we employ practically the passive movements, we require to discern principally whether the organ which is to be decreased, be closely under the skin or in a cavity which is chiefly surrounded by tender parts, as for instance, in the abdominal cavity, or in a cavity which is more or less surrounded and protected by bone, as the cavity of the chest. In the former case we generally make use of pressures, or sawing movements, in the latter of such passive movements as propagate a vibration to a greater distance.

## THE INDICATIONS FOR COMBINED MOVEMENTS

Are similar to those of active and passive movements.

The following curative methods and remedies, formerly so called from their effects, may serve to supply some hints for the indication of movements.

1. *Methodus diaphoretica*. Active, passive, and combined movements, as for instance, rubbing, kneading, pulling, fencing, riding, running, etc., produce perspiration, which is very different from the perspiration produced by medicines, and is, according to Schultz, the product of the organic waste; friction also produces perspiration, and Richter quotes a mesmeriser, celebrated in Saxony for the cures he effects by perspiration, produced by frictions.



2. *Methodus rubefaciens*, which, by the action on the sensitive nerves of the skin, produces reflex action or excites the brain, and consequently the motory nerves, as in numbness and paralysis, asphyxia; rubbing, vibration, dry cupping or a harder and continued pressure, produce erythema.

3. *Methodus adstringens (contrahens)* increases the consistence of the organic textures; the pressure is very important, in order to make the textures and morbid products more hard, firm, and elastic.

4. *Methodus relaxans, emolliens* diminishes the density and consistence of the textures; the kneading, pulling, pressing, and friction have emollient effects.

5. *Dividing (separating) method*. To the mechanical means of this method belong the tearing (evulsio and divulsio) with the fingers, and the squeezing (of ganglions and polypi).

6. *Methodus reuniens*; we do not mention the different uniting manipulations with the fingers and hands alone, or with the help of instruments known to everybody.

7. *Indirectly restoring method* has for its object that the food and drink may be suitably digested, assimilated, and transformed into organic substance; exercise of the body in general; active movements, in healthy persons, as gardening, travelling; passive in those suffering from diseases.

8. *Methodus emacians* diminishes the quantity of the substance in the whole body or in single parts, as for instance, bodily labour; active general movements are the best curative means in great fatness, piles, and gout.

9. *Methodus solvens (dissolvens, liquans, retroformans, lytica)*, etc., dissolves firm morbid products, or over-solidity of the constituent parts of the body.

a. Active movements increase the change of the substances; as for instance, by deeper and accelerated breathing, or by the increased excretion of bile, produced by the pressure of the abdominal muscles; the increased

movements of the heart, and of the retro-fluxion to the heart by more powerful breathing, by muscular actions, both acting on the retro-leading venous and lymphatic vessels.

β. Some passive movements, as flexion and rotation in diseases of the articulation, and also frictions, vibrations, pulling, and kneading, are extremely useful as dissolvents in callous infiltrations of the texture.

γ. Pressure, and principally compression, is a very important absorbent and dissolvent means, in causing the increase of the circulation of the venous blood.

δ. Ligature is used for some seconds or minutes in diseases of the bones, principally if the tubes are diseased, and in swellings of the articulations, in stasis and varices of the veins, by which the circulation of the venous blood, stopped in the first moment, is accelerated by the secondary effect.

10. *Methodus evacuens* removes substances from the internal body.

11. *Methodus mundificans* removes unclean and noxious matters from the external skin. To this method belong frictions, scraping, peeling off. The Turkish female medical advisers cure incipient croup by griping with the fingers deep into the throat of the child, and free it from the exudated membranes.

12. *Methodus dilatans* increases the diameter of natural or morbid openings and channels, either for a shorter or longer time, or for ever. As dilating mechanico-surgical means, for pressing from inwards to outwards, the hand and the fingers of the operator are to be preferred.

13. *Methodus coarctans constringens* diminishes the diameter of natural and morbid openings and channels. To the remedies of this class belong the different kinds of concentric pressure (compression) with the fingers and hands; substituted in bleedings by compression with bandages or tourniquets, by strips with adhesive plaster; this method is also used for the prevention and

cure of many inflammatory diseases of the skin, as erysipelas, eczema, burning ; in induration and swelling of different glands, diseases of the articulation, absorption of hydropic exudation, and effusion of blood ; for the cure of wounds, ulcers, fistulæ, phlebitis, varix, etc.

14 *Methodus nauseotica*. Nausea is produced by the turning in a circle ; as for instance, on a turning chair, and also by circular frictions of the stomach region.

15. *Methodus roborans tonica* increases the effective faculty of the muscular and contracted fibres ; amongst its means are, bodily labour, exercise, active general movements diminishing the over-sensibility of the skin towards external agents, by frictions, vibrations, etc.

16. *Methodus debilitans*, or weakening cure ; to this belong all passive movements which diminish the circulation, active muscular action, and the nutrition by local compression, pressure, bandages, etc.

17. *Curative method by music*. The tune, which is but the name of a vibration produced by the air on our auditive nerve, is very important in the cure of deafness, because this nerve is particularly disposed to become paralysed by inattention and disuse. It appears that the faculty of hearing is, in many of the most different treatments, increased in the beginning, so long as we try the hearing of the patient daily at a certain distance ; on the contrary, the deafness returns, if we cease these daily trials.

The vibrations of the air produced by loud sound serve as artificial remedies, as an arousing, awakening influence, and gentle sounds as soothing and tranquillising. Major and minor chords, and music in general, belong to the artificial movements produced by the air, which air itself, by its different pressure, by the differences of high temperature, electricity, terrestrial magnetism, density, humidity, etc., acts differently as well on the external skin as on the respiratory organs and the senses. Music acts very successfully in psychical diseases, and the difference of the number of vibrations and of their different combi-

nation, which give the special character to music, produces also a different influence on our mind. The ancients employed music, as we know by David's harp; but unfortunately the indications for its scientific application are but very insufficiently known. If we ourselves produce the tune, we have, besides the psychical influence, also a development of the respective parts producing the tune, which is often curative. Loud sound is used as an awakening in lethargy, in suffocating asthmatic fits, in order to rouse the patient, and to excite the expectoration, also in the torpid stage of typhus, and in freezing. The artificial increase of the vibration by ear-tubes is not only a palliative in deafness, but also sometimes curative, because the patient being more attentive, the aggravation of the evil, occasioned by indifference and inattention, is prevented.

18. *Methodus excitans* increases the nervous activity, principally of the central organs, quickly and vividly; whereby the sensations, the muscular movements, and the secretions and excretions are brought into action. The regular movements of a particular organ are increased, in order to produce a proposed curative effect, as for instance, movements acting on the heart, in order to increase its activity, and thereby to produce perspiration. Different trembling movements and vibrations of the air belong to the exciting means.

19. *Methodus antagonistica*. Exciting movements of one part can be and are at the same time derivative for others, and become antagonistic enantiopathic means, if they are used to act in another remote and at the same time diseased organ; as for instance, sneezing and vomiting produced by mechanical means. Many active or passive movements are simultaneously derivative from central and sensitive nervous systems, as well as for congestions of internal organs.

20. *Methodus calefaciens*, the object of which is warm-



ing, has amongst its means, besides the active movements, friction, kneading, pointing, pressing, etc.

21. *Remedia spinalia*. Amongst these are mentioned the general active movements of the muscles, as far as they increase the activity of the motory, and diminish that of the sensitive nerves.

22. *Remedia ganglionica*. To these belong the different specific passive manipulations, acting directly on the heart, lungs, intestines, etc.

23. *Remedia hypnotica*. Sleep is produced by general active movements, by their secondary effect, and primarily, by kneading, friction, combing, swinging, etc.

24. *Remedia deprimentia (methodus deprimens)*. Pains are allayed by ligature, pressure, etc.

25. *Remedia arteriotica, phlebotica, and plocamotica*. All movements acting on the blood and lymph belong to these means; and they belong especially to the *plastica* or *plastico-hæmica*, if the quantity of blood is increased by them, and if this is diminished, to the *plasti-lytica*.

As the movements act in very different ways, according to their different local applications, the number of the names of the curative methods and remedies to which they belong could very easily be increased.

## DESCRIPTION OF SINGLE MOVEMENTS.

### THE FLEXION MOVEMENT.

The flexion movement, or the act of flexion, is a movement in which two or more parts of the frame-work of the body are made to change their position by a change of the angle in the articulation, in such a manner that they form a more acute angle, and the part of the body moved obtains by these means a crooked or an angular form. The flexion must necessarily act at least on one articulation.

*Effects of Flexion*. The flexion produces an equal distribution of the innervation, as well in particular groups

of muscles and trunks of vessels, as in the single muscular strata, in the tendinous expansions and ligaments; it strengthens the respective muscles, brings the organs into an opposite state of tension, by which a great change of the condition of the molecular particles of the body is generally produced. The flexions are either active or active-passive; in the latter case they act more energetically, and must therefore be executed with special caution. The more acute the angle of the flexion is, the more deeply is the effect felt inwardly. This must be principally considered in relation to the flexions of the trunk; because in these flexions, if they transgress a certain measure, a very considerable flexion also takes place in the *aorta descendens* and *vena cava*, which ought not to be occasioned, unless we specially wish it, or if it does not interfere with the end we have in view, namely, to press the blood in the above-named vessels, which is necessarily produced by such a very strong flexion. If we wish to act more strongly on the trunk by the flexion, without causing this pressure of the blood in these large vessels, the flexion must be restricted with respect to the quality, and increased with respect to its quantity by resistance; this is the case for instance, if we wish to strengthen the *recti abdominis* and the muscles of the back, and if an increased congestion to the head and chest be not desirable; but if it is our intention to produce this congestion, then a stronger flexion is necessary, and the body may, according to circumstances, remain in this bent position for some time, from two to four or five minutes.

#### THE EXTENSION MOVEMENT.

Extension, or the act of extending, is a movement opposite to flexion or bending, because it restores the part of the body which is bent to a straighter or an entirely straight position.

The ideas of flexion and extension are only relative, at least in those cases in which a flexion is possible

in contrary directions, as for instance in the bending of the trunk. The flexion of the trunk backwards is at the same time an extension of the anterior part of the trunk, and a flexion of the trunk to the left is simultaneously an extension of the right side of the trunk. It is the same in the limbs, because in every act of flexion there is an opposite extension. We are accustomed, in the movements of the arms, to designate the direction of extension by the back of the hands, the flexion by the palm; in the movements of the legs, the sole of the foot indicates the direction of flexion, and the dorsum of the foot the direction of extension, which is the reason that the respective muscles are named flexors and extensors.

As the formation of the articulation of the elbows does not permit a movement backwards beyond the straight line, and the articulation of the knee no movement forwards beyond the straight line, every movement of the fore-arm backwards, and every movement of the inferior part of the leg forwards, is generally called extension.

#### ABDUCTION AND ADDUCTION.

*Abduction, drawing apart*, is a movement belonging only to the limbs, by which the limb is drawn apart from the mesial line either of the body or of that limb to which the moved limb is in relation. The moving of the arm from the mesial line of the body, or the spreading out of the fingers, are abductive movements. The abduction executed at the same time with both arms or both legs is a double abduction.

*Adduction, or the act of drawing together*, is the opposite movement to abduction, by which a limb previously drawn from the mesial line of the body, is again brought more to it or to the limb to which it is in relation. Instances of adduction are the bringing together of the previously separated feet, or the approximation of the fingers previously drawn from one another. If the adduction is performed with both arms, or both legs at

the same time, the movement is called a double adduction.

*Effects of Adduction and Abduction.* Adduction and abduction being employed only on the extremities, correspond with each other, and are generally executed one after the other. For a passive-active movement the resistance is opposed according to the direction, either that the adduction of the limbs may have the same effect as the abduction, or so that it may have the contrary one. The effect of these movements on the lower extremities is always upon the adducting and abducting muscles, or only upon the former or the latter alone, or the more definite on the vessels and nerves of these muscles. In a similar manner, during the adduction or abduction of the arms, the effect is more in the vessels and nerves of the pectoral muscles, the posterior muscles of the shoulder and of the anterior part of the *serratus magnus*. These arm-movements have an important influence upon the thorax, and are consequently employed for correcting deformities, and in the treatment of certain diseases of the chest. In the latter case they are analogous to the striking and throwing arm-movements, which act more violently, and are therefore generally used only in the final treatment. If we wish to act upon one side of the body only, the extremity of this side must be abducted and adducted, while the other is fixed.

#### THE HEAVING MOVEMENT.

Heaving or raising (an exertion upwards) is a movement which concerns only the upper limbs, by which, in consequence of an effort of the flexors, and some other muscles acting in harmony with them, the body is raised up, or any other weight is lifted up from the ground without any other help than the effort of these muscles. If this heaving of any other weight is continued above the height of the shoulders, then the extensor muscles come also into play.



*Effect.* Heaving is an active movement, acting on the respiratory movements, the secondary effect of which is a compensation of the circulation in the lungs ; besides the pectoral muscles, those also of the shoulders and arms are strengthened.

#### THE RISING-UP MOVEMENT.

Rising up (the act of getting up) is a heaving movement effected by the muscles of the trunk and thighs, by which the body is raised from the lying, sitting, kneeling, or in general from an angular position, to a more erect or less angular one. The body itself, with or without any other burden, is the load which is to be raised. If any other burden is to be lifted from the floor, then heaving is always combined with rising up.

*Effect.* Rising up is a movement acting on the respective muscles, but by the change of the angles of the trunk, there occurs also a diametral change in the direction from before backwards, and consequently an effect upon the intestinal organs.

#### THE LETTING-DOWN MOVEMENT.

Letting down (the act of lowering) is the entirely opposite movement to the act of getting up.

#### THE LIFTING MOVEMENT.

Lifting is the movement by which the whole or a part of the body lying upon or touching any surface is lifted or removed from this plane either partially or entirely. If the body sitting in an arm-chair, with a high back, is lifted in such a manner that the head and inferior part of the trunk only touch the chair, we have the idea of lifting. The body lying on the floor, and then raised so that only the heels and the hands touch the floor, is also a similar movement.

*Effect.* Lifting, generally employed as a passive move-

ment on the trunk, is a slight respiratory movement, which gives a freer movement to the lungs, and also to the circulation of the blood in these organs.

#### THE BOWING MOVEMENT.

Bowing (the act of inclining) is a movement of the trunk, by which it comes forward in the articulations of the hips, and by which, without a perceptible flexion of the spine, it forms an angle with the standing or fixed thighs.

#### THE RECLINING MOVEMENT.

Reclining is a movement of the trunk opposite to the preceding, by which the angle is formed backwards, in the standing or half-lying position, in the articulations of the hips, and without a flexion of the spine.

The two last movements are often used as repeated movements principally in the lying position; the trunk is then moved, during a certain time, up and down.

#### SWIMMING OF THE ARMS.

Swimming of the arms is a movement by which, in the first motion, the lower parts of the arms are slowly put together above the head and forwards till the fingers of both hands touch each other with the inside, while the arms are in a more than half-extended position; the second motion consists in a half-circular, slow putting-down of the arms, till they touch with the inside the outside of the thighs.

#### SWIMMING OF THE LEGS.

Swimming of the legs is executed only in the depending or lying-commencing position. The first motion of it consists in gently drawing upwards both legs put closely together, and bent in the knees as far as possible; in the second motion, the legs are stretched most energetically and very quickly, and at the same

time parted as far as possible outwards ; the repetition of the two movements is the same which we make when swimming.

When we swim, the first motions of the two preceding exercises are simultaneously executed, as well as the second motions, which push the body forward.

In cases where swimming is recommended as an exercise, and where the influence of cold water is not desirable, this exercise is practised in the air ; the body, surrounded by a wide band covering the stomach and abdomen, hangs by this band between two fixed pillars. If the physician wishes the air-bath combined with this exercise, the patient remains in the open air, and is only dressed in a wide shirt and trousers.

Swimming of the legs is also executed in the lying position on the back ; the legs, touching each other by the inside of the feet, are slowly drawn to the trunk, while the knees are directed as far as possible outwards ; in the second motion, the feet are separated, and the legs strongly and quickly extended.

#### FLYING MOVEMENT.

The flying movement consists of passive double movements of the arms, which are extended and raised till they form an angle of about 125 degrees with the body, which is to be in the erect posture, then they are brought slowly towards the thighs, but always in the half-extended position ; the hands have their backs directed upwards.

#### TURNING MOVEMENT.

We mean by this only turning round an axis ; these turnings are often used, and called according to the part which is turned, as for instance, hand-turning, head-turning, trunk-turning. If the whole body is turned round its longitudinal axis, this is named a *turn*, which has the subdivisions of a whole, a half, a quarter, or an

eighth turn. The turning of the body round its transverse axis is called a *revolution*; and if this is passively executed by the assistance of others, and only partly, in such a manner that the body remains in its position with the head downwards for a time, we call it a *turning over*.

*Effect.* Turning, if active or active-passive, acts on the vessels and nerves of the various muscles of the trunk, and is the stronger, the greater the opposed resistance is. But a passive turning may also act on the deeper blood-vessels and on the abdominal organs, without any essential influence upon the vessels and the nerves of the muscles; such a turning is, for instance, the passive turning of the trunk in the high recurved half-lying position. The active and active-passive turning acts always also on the abdominal organs, and the essential effect is still on the muscles and their vessels and nerves. Generally, the turning is done as an alternative-turning, that is, to left and right, and then almost immediately after follows a backward flexion of the trunk.

#### CONTORTION MOVEMENT.

Contortion is a movement by which the turning of a limb or of the trunk is effected on the two end points, from two opposite directions.

*Slinging* is entirely analogous to the preceding, but is always only an active movement, executed round a fixed object.

*Effect.* Contortion is a kind of spiral movement, executed in the sitting or lying-commencing position, and it acts as a passive movement on the bowels, on that side in which it is directed; if it is active-passive, then this effect is weakened, and the vessels and nerves of the intercostal muscles and external abdominal muscles are more acted upon.



## ROTATION MOVEMENT.

Rotation is a movement, by which a certain part of the body turns, neither round its own axis nor any other body, but around some imaginary axis, always describing the figure of a cone. An arm rotation, for instance, is performed by causing the hand of the extended arm to describe a circle, representing the base of a cone, the apex of which shall be the articulation of the shoulder, whilst the arm turns round the side of this imaginary cone.

Rotation can only be executed where the part of the body to be moved can be moved round a fixed point. This movement is generally employed as rotation of the arm, head, trunk, thigh, and feet, as well in an active as in a passive manner.

*Effect.* Rotation acts generally on the deeper parts. The rotation of the head produces the sensation of giddiness, which is the consequence of the circulation of the blood being retarded in the cerebral vessels. If the loins are fixed, the passive rotation of the trunk has an effect upon the venous capillary vessels of the lungs and of the heart; if the patient resists with the thorax, the course of the arterial blood in its muscles is increased, while the course of the venous blood of the capillaries of the internal parts is diminished. If the loins are not fixed, and the abdominal muscles are passive and loose, the effect of the rotation of the trunk is on the abdominal organs, and principally on the venous and lymphatic absorbents of the intestinal tube. Rotation of the limbs in their different articulations acts on the more equal distribution of the synovia and the humours in general, and increases the absorbent activity in the vascular textures of the articulations.

## PULLING MOVEMENT.

Pulling is a passive or active-passive movement, by

which a limb is extended at full length, in a certain direction. The pulling is done in different commencing positions, and is directed as well upon the trunk as upon the limbs, according to which the effect is also different. Pulling relaxes the ligaments of the articulations and the tendons, strengthens the various muscles, and produces congestion and irritation. In the oriental bath, pulling is used until the joints crack. The backwards pulling, directed on the trunk in the leaning-standing position, acts chiefly on the fasciæ and muscles of the trunk, and of the anterior part of the thigh, and acts at the same time strongly on the more superficial vascular textures of the anterior of the trunk. The effect of pulling on the extremities is different, according to whether they are extended or fixed: in the first case it is only superficial, because the blood-vessels, compressed by the extensors, drive the blood into the capillary vessels, by which means the nerves of the vessels are excited; in the second case, the effect on the vessels is more partial, according to the different muscular action, and acts the more deeply inwards, according to the amount of resistance made by the patient himself.

#### SPANNING, STEMMING, HOLDING MOVEMENTS.

Spanning differs from pulling, as it acts in two directions. If the body executes the tension only by the inherent force of its muscles, this shows itself by the effort of extending the limbs, which act is called *stemming*. This is often executed in the horizontal position with the whole body, the feet as well as the hands stem against fixed objects, and the body tries, by its own force, to extend itself, and to push the fixed objects in two opposite directions, which can be done only if the body, and particularly the arms and legs, are not entirely extended in the beginning of the exercise. The entirely extended position of the body in this horizontal level is called *holding*.

*Effect.* Spanning, principally employed on the chest,

produces a diametral change and an extension of the inspiratory muscles, by which an equal circulation of the blood in the capillaries of the lungs is effected. Holding equalizes the innervation and the activity of the capillary vessels in the greater part of all motory muscles; combined with the spanning, principally as cross-holding, it belongs to the general equalizing forms of movements, which are used as well in hygienic as curative treatment, after a previous employment of local movements.

#### BALANCING MOVEMENT.

Balancing is the simultaneous regulation of the force of all parts of the body, in order to attain or to preserve a certain position; while walking or standing, if these movements are done in a determined manner, the balancing is very necessary.

Balancing of the body on the head, as we see it often in children when playing, is very dangerous; but balancing of different weights upon the head is sometimes useful, for strengthening certain muscles of the neck.

Balancing is used mostly in the active movements, because it is necessary there should be a continual weighing of the equilibrium, principally during the movements of the trunk and the lower extremities. As peculiar exercises, the balancing movements are of importance, because they are not only necessary for the development of the body in general, but also as levelling and correcting movements.

#### ROCKING MOVEMENT.

Rocking is a passive movement, by which the body, remaining in an extended position, is moved, either sideways on its own or another axis, hither and thither; this movement produces sleep, as we know from its use for children, but it has also the same effect in adults rocking in a little boat. Rocking of the upper part of

the body is executed in the stride-high-sitting position, while the lower part of the trunk and the feet are fixed, by the passive movement of the upper part of the body hither and thither.

#### RUSSIAN SWINGING MOVEMENT.

Russian swinging is a passive movement, by which the whole body, which is fixed on a moveable circular object, is moved in a vertical level, either up and down or forwards and backwards, in such a manner that it repeatedly describes a circle. An ordinary beam or balancing-bar serves for the movement upwards and downwards, and they employ a suspended rope, or a climbing rope with short sticks, for the movement forwards and backwards.

#### PERIPHERICAL MOVEMENT.

The horizontal peripheral movement is a passive movement, by which the body, fixed on a circularly moveable object, is moved in a continuous circle, and in a direction which always remains the same. The peripheral movement is horizontal or vertical. In the horizontal: 1st, the anterior of the body, and also the eyes are directed towards the centre of the circle, and the look is fixed upon it; or 2nd, the anterior of the body, as well as the eyes, are directed in the opposite way, and the look describes at the same time the exterior circle; or 3rd, the anterior of the body is directed towards the periphery, but the look is either in the direction of the movement forwards, or in an opposite one to it backwards. The horizontal peripheral movement, with the feet outwards, is a powerful means of producing congestions to the feet, and the catamenia. The vertical peripheral movement round the longitudinal axis of the body has been used on turning-chairs for punishment and for mental diseases, in order to produce giddiness, nausea, vomiting.



## PENDULUM MOVEMENT.

The pendulum movement is a species of swinging, in which the point of turning is on the body itself, or very near to it, and in which the body, partly by its own muscles, partly by its force of gravitation, determines the movement. The natural movements of the arms and legs, while walking, are pendulum movements, the turning-point of which is in the articulations of the shoulders and hips.

## SWINGING MOVEMENT.

Swinging differs from the pendulum movement in this respect, that it is not a repeated one, and that the muscular force not only produces the movement, but regulates also the force of gravitation, from the beginning to the end of the movement. The swinging is always an active movement, and must not only be executed in the vertical level, but also in different levels.

The Russian swinging, the swinging, the peripheric, and pendulum movements influence particularly the circulation, the peristaltic movements of the bowels, the activity of the nerves, and show themselves symptomatically by different kinds of giddiness, by the change in the throbbings of the pulse, and other particular sensations. These movements must be regulated, with respect to their quantity and quality, by the greatness of the diameter and of the angle, as well as by the extent of the moving force.

## PRESSING MOVEMENT.

Pressing is a pressure on one side of a certain part of the body. According to whether this pressure is produced by the inside of the fingers or hands, or only by the end of one finger, the act is called *flat pressure* or *point pressure*; the pressure increases by degrees, lasts

in its highest pitch a certain time, and diminishes by degrees.

#### SQUEEZING MOVEMENTS.

Squeezing is a pressure executed by assistants on two opposite sides of the diseased part of the body, which pressure, when in its highest degree, is suddenly stopped. A suddenly-interrupted pressure is to be considered as a squeezing on one side. If we wish that the squeezing may last during its strongest degree a longer time (for instance, some minutes), then we make use of the ligature; for which purpose a band, a strap of leather, or a girdle is put around the limb or the trunk, which is tightened by degrees, and then left on the trunk or limb as long as the squeezing is to be continued.

*Effect.* The pressing and squeezing movements produce, according to their greater or less intensity, a local effect, as well on the superficial as on the deeper parts and organs of the body. If the pressing is practised on a certain blood-vessel, the operator must always bear in mind the ramifications of that vessel. Pressing acts partly as a sedative; as for instance, in neuralgic pains, partly by changing the circulation of the blood, which is locally primitively either increased or diminished, and ordinarily followed by a secondary opposite effect as soon as the pressing ceases. Pressing on the veins of the throat produces a swelling of the vascular ramifications of the head, by which means the brain becomes in a state of congestion, the secondary effect of which is an absorbing process, of longer or shorter duration, in the brain.

Pressing on the superciliary arch is followed by a more active absorption of the aqueous humour, and through that, by a secondary effect, it acts on the cornea. Pressing on certain nervous branches produces also definite effects; as for instance, the pressing on the eleventh pair of the cerebral nerves relieves, or even entirely cures, the rheumatic pains

of some muscles of the back, principally if it is combined with some other manipulations. The cure of toothache and certain swellings by this movement is generally known.

Squeezing has a similar effect, and as the pressure ceases suddenly, the blood rushes on the squeezed part with increased energy to the vessels, which during the manipulation had been either entirely closed or only diminished in calibre, and consequently by these means, the circulation, which had become very slow in certain vascular branches, may again be rendered regular. In certain abdominal and chest diseases, the patient is squeezed on all four sides, immediately below the lowest rib, by which he feels a pressure acting obliquely upwards towards the trunk; besides the general effect of the pressure, there is also produced a vibration of the organs of the chest, because the thorax suddenly sinks down as soon as the above pressure, acting upwards, is discontinued.

#### LIGATURE.

The ligature is the only form in which, during a treatment by movements, an external technical means is employed longer than a few seconds as a real curative agent, and not only as an accessory. It consists in this, that a handkerchief, band, tourniquet, or anything similar that binds, fastens, or buckles, etc., is put round a part of the body, on which it remains one or more minutes, according to circumstances.

The ligature is principally employed round the base of the cranium, the abdomen, and the extremities, and generally where a retarding of the venous blood towards the central veins is desired.

*Effect.* Its influence is extended, not only to the nearest soft parts lying immediately beneath, but can also, if the ligature be stronger, act upon the periosteum and the substance of the bones; this manipulation therefore belongs to those which are used in the treatment of tubercles

of the bones. It acts also very well in cases of varices, by restoring the regular strength to the external part of the veins. The effect of the ligature is increased if it be followed immediately by a pulling or kneading of the tied part.

#### SHAKING MOVEMENT.

Shaking is a repeated movement, not executed with great force, but acting in the manner of slight jolts and jerks. Should the whole limb be subjected to it, then this is held by its free end with both hands of the assistant, who produces a considerable vibrating movement, which propagates itself to the fixed articulation, and to its circumference, by a very short and exactly executed shaking. If the shaking is to be employed on the head, trunk, or on tender parts, then we distinguish a *flat (superficial)* and a *point shaking*. The flat shake is executed by the assistant extending his hand towards the part of the patient's body he wishes to act upon, and making, under a continual pressure, a more or less strong vibrating movement with his arm, and by that means with his hand, which vibration is communicated to a certain part of the patient. The point-shake is done in the same manner, not with the hand, but solely with the end of the third finger, on the spot destined to be subjected to it; this last operation is executed very gently, so that it consists in a very fine tremulous motion, called *vibration*.

*Effect.* If this movement is employed in such a manner that it is transmitted to a certain articulation, the effect is directed upon the ligaments of this articulation. Employed on a greater or smaller surface, the venous absorption is increased according to the intensity of the movement. During the vibration of the front and neck, the patient feels a passing sensation of giddiness, which arises from the venous congestion produced during the movement, the secondary effect of which is an increased absorption. Point-shaking with the ends of the fingers on



the pit of the stomach has a very good effect in hysterical and hypochondriacal pains. Shaking with the palm of the hand on the abdomen acts very well on the abdominal vessels and the functions of digestion.

The merely mechanical effect of the shaking is principally the dislocation of the organic molecules; if employed daily for a long time and continuously, it produces a change of the texture in the more firm parts. Continued during a shorter time, in a slighter degree, it produces but a transient dislocation of the molecules, which being in many cases very curative, is therefore desirable. The more organic effect is directed to the blood and nervous system.

*Vibration* acts similarly to shaking, but it is milder, and acts only superficially if done without pressure. In weakly constitutions vibration must always precede shaking.

#### KNOCKING MOVEMENT.

The assistant makes, with his fist loosely clenched, and moving freely in the articulation of the wrist, short blows of determined force towards the parts of the patient we wish to act on; this act is principally employed on the sacrum. Knocking is also often employed on the soles of the feet, in which case we make use of a short cylindrical stick, wherewith we beat on the soles of the shoes.

*Effect.* Knocking with the fist acts on the skin, as well on its vessels as on those of the deeper organs; it is sometimes employed on the sacrum, and produces here at the same time slight vibrations of the spinal marrow.

#### TAPPING MOVEMENT.

Tapping is a species of knocking with the end of one finger, or with the second, third, and fourth fingers spread a little apart.

*Effect.* Tapping acts on the sensitive nerves of the part of the body to which it is applied, and is princi-

pally employed on the forehead, top of the head, neck, back, and chest, in cases of lessened irritability of the nerves.

#### CLAPPING MOVEMENT.

Clapping is similar to knocking; it is not executed with the clenched fist, but with the palm of the hand, which must be easily moved in the articulation of the wrist.

*Effect.* Clapping with the palm of the hand acts only on the vessels and the fat stratum of the external skin, and on the tendinous expansions.

#### CHOPPING MOVEMENT.

Chopping consists in alternative short blows, produced by the external sides of both the operator's hands. Choppings are principally used on the posterior surface of the trunk, chest, and also on the limbs. If it is desirable that the succussion produced by this movement shall be less and softer, then the chopping is done with the external edges of the two little fingers, while the other fingers are spread apart, but not kept spasmodically fast, so that they act also, by striking upon the little finger.

Chopping may be confined to one part only, or may be exercised on a larger surface, by constantly moving the position of the hands. The chopping is called a *longitudinal* one, if the hands are moved in the longitudinal direction of the trunk or of the limb, and a *transversal* one, if the blows are executed across the limbs.

*Effect.* Choppings produce generally a venous absorption in the capillary texture, not only of the external skin and the tendinous expansions, but also, if more strongly used, in the muscles and bones; in imperfectly paralysed muscles they excite the innervation both of the motory and sensitive fibres. If directed on the lower extremities, on the soles, they act very well in hæmorrhoidal complaints, headache, etc. On the chest

or along the spine, they are efficacious specific movements in certain complaints of the chest, partly by their direct influence on the muscles of the chest, partly by the tremulous, passive vibration communicated to the lungs. If chopping be employed on the chest, the fingers must always be spread and separated, that the percussion may be more elastic.

## SAWING MOVEMENT.

Sawing is executed by both hands of the operator, which are kept open and extended straight, with the external edges on two opposite sides of the limb, and then moved backwards and forwards with the necessary pressure and in quick slides, as when sawing. The same movement done with the palms of the hands is called *fulling*.

*Effect.* Sawing is employed in order to increase the absorption in the fasciæ. The effect on the capillaries of these tissues is produced by the moveable external skin and its adipose stratum moving hither and thither upon the fasciæ; if the movement is done with some pressure the effect is deeper. Fulling acts more on the superficial vessels, the cellular texture and its adipose substance. Friction is generally performed after the two preceding movements.

If the sawing and fulling are done with some pressure, they contribute to the dissipation of the plastic effusion produced by the muscular efforts; therefore both these movements are very useful if, after a violent effort, during some labour, or during active movement, pain, as of a strain, is felt in the muscles; in which case it would be advisable to repeat several times during the day, the fulling with pressure, followed by friction.

The five preceding movements are *repeated* ones, but each of them is always repeated from two to four times. If, for instance, a longitudinal chopping on the back is employed, the blows begin between the shoulders, and

are uninterruptedly continued to the loins, so that the chopping on the back as a repeated movement is finished ; but after an interval of a few seconds it is executed a second, and after a similar interval, a third time, etc. The pressure or the blow is as little as possible at first ; in the repetition it is increased, and towards the end of the repetition it is again diminished.

#### KNEADING MOVEMENT.

Kneading is a repeated movement, by which the skin of a certain part is acted upon by softer and stronger, but not painfully pinching and griping movements ; the skin is then alternately held and let loose, as we are accustomed to do when kneading a mass of dough.

*Effect.* Kneading increases the nutrition, retroformation, and the circulation of the blood in the muscular substance and other tender parts ; the hyperæsthesia of the nerves of the muscles is diminished, which is probably the reason of its popular use in rheumatic pains ; also the morbid products, as for instance, the rheumatic swellings under the skin, between the fasciæ and fibres of the muscles, are more quickly and easily absorbed. Kneading of the abdomen is executed in the same manner, and is only a kneading of the skin ; but if we wish to communicate the effect to the bowels, then we do not pinch more strongly, but we take a larger grasp, whereby we include the bowels. In this case the movement is called *peristaltic kneading*.

#### STROKING MOVEMENT.

Stroking is done with the palm of the hand, or the palmar surface of the fingers, either in the direction of the longitudinal or transverse axis of the limb or of the body, or in a circular direction. We have, therefore, a *longitudinal*, a *transverse*, and a *circular* mode of doing this ; but there is also a *centripetal* one (that is, in the direction of the centripetal venous system), and a *cen-*



*trifugal* one (that is, in the direction of the centrifugal arterial system). According as we wish at once to influence the circulation of the blood and of the humours, by this passive movement, or to influence the nerves, the pressure of the hand is to be varied. In the latter case, the appulse must be so soft, that the mechanical influence of the pressure upon the skin is almost imperceptible; but if such is the case, that is, if the hand does not touch the body, we call it *acting at a distance*, the effect of which is often explained by mesmerism, although it is possible that it owes its effects to the air acting equally on the nerves of the skin.

*Effect.* This movement acts as a very important sedative on the nerves, and the direction of it is not a matter of indifference; from the brain along the limbs, when gently done, it soothes the brain, allays universal spasms, and produces sleep, etc. In the opposite direction it excites and produces the contrary symptoms; quick movements with the thumb, from the middle of the forehead to the temples, awaken, and allay pains in the forehead, and heaviness of the head. This manipulation quickens or retards the circulation of the venous blood, which depends only upon the difference of the direction in which the movement is made.

#### FRICTIONS.

Frictions differ from the last-mentioned movements in the circumstance of the hand not being moved continually in one direction, but being brought more or less quickly, with a softer or stronger pressure, in different directions over the part we wish to act on. As long as the frictions are executed only by the aid of mechanical appliances, such as flannel, brushes, etc., they do not belong strictly to the class of medicated ones, under which name we generally understand embrocations, or frictions with oil, ointments, etc.

*The effects of frictions* are different according to the

greater or less pressure applied by the hand, and to the duration of its application. The skin is most acted upon; the epithelium and the different foreign substances that obstruct the excretory parts of the cutaneous glands are removed; the sensitive nerves of the skin are more or less stimulated; the arterial congestion of the skin is increased as well as its temperature; the excretion of the cutaneous glands is promoted, and a greater activity in the textures subjacent to the skin produced.

Frictions are used locally, in order to increase the temperature, activity, and absorption of the skin and adjacent parts. They are also employed as derivatives, in order to restore the circulation of the blood in fainting, asphyxia, cholera, etc.; to produce curative congestions to the external parts, frictions of the thighs and legs are useful. In neuralgic pains, in cramp of the calf, they allay the pains; circular frictions of the stomach are said to promote vomiting, and frictions of the abdomen increase the peristaltic movements of the bowels. The itching of the skin is changed by the friction into a more tolerable and rather burning sensation. Woollen dresses owe their whole or some of their effect probably to the friction which they produce.

#### STANDING.

Standing is that position of a living body in which it is raised upright on the limbs designed for walking movement, and on which the weight of the whole body rests. Man is intended to have an erect position of his body, and is organized for that purpose. The weight of the body, if in a standing attitude, rests only upon the soles of the feet, and the point of gravitation falls between the feet, by separating which the standing posture becomes firmer, especially if one foot is put a little forward, because the natural direction of the movements of the upper part of the body whilst standing is more forwards and backwards than sideways. In consequence

of the formation of the articulation of the feet, the toes are directed slightly outwards, which likewise increases the basis of support. If this outward direction of the foot forms with the straight line between the feet an angle greater than forty-five degrees, the security of standing diminishes, and is smallest, if the feet are put with the heels together, and if the outward position of the toes forms a straight line.

A slight flexion in the articulation of the knees and hips not only makes standing much easier, but thereby also the upper part of the body is enabled to make movements more easily, without being obliged to raise the feet; therefore standing without some flexion of the hips and knees is an unnatural forced position.

It depends upon the position whether we put the weight of the body equally on both feet or not, and we have the advantage by changing the position of the feet, of changing also the distribution of the weight. If both feet are in the same position when they both support the weight, as soon as we bend a little over one or the other foot, we at the same time transfer the point of gravitation to it, and relieve the other foot, and by inclining still more, we may even transfer the weight of the raised leg upon the other foot.

Standing upon one foot is very uncertain, because the strain upon the foot is very great; the upper part of the body can only move a little sideways, notwithstanding the posture cannot be retained for any length of time.

Although it appears that we stand upon the whole soles of the feet, this is not the case, because the sole being like a vault, we touch the heel principally in three points only, backwards on the heel, forwards on the anterior ends of the metatarsal bones, internally upon the bone of the large toe, and externally on the metatarsal bone of the little toe; the weight of the body diminishes the natural vault of the sole of the foot, and it becomes larger, this is the reason that a tight boot or shoe causes

more pain when we stand than when we sit with the feet hanging down. We can stand upon all of the three-named points of the foot, but we most commonly stand upon the anterior internal part, in which also the toes become supporting points, because the weight of the body is transferred to them; the advantage of this standing upon the toes is the lengthening of the body, varying from one and a half to four or more inches, depending upon the natural length of the foot itself. This position enables us often to satisfy our curiosity if we wish to look over other persons or objects, and then there is generally a bending of the head backwards combined with it.

People who fear to touch the ground with the entire sole of the foot, as is often the case with patients, stand only on the heels; the same is the case with the anterior external supporting part of the foot. Properly speaking, there is no greater basis necessary for standing than the surface of the soles of the feet, as long as the body on which we stand remains quiet, or is not pushed or kicked away; we are therefore entirely safe on the top of a roof, or on the edge of a precipice, if we are not giddy, or if we do not fear being pushed down by an external influence; it is possible to stand even on a smaller basis, and on one foot, but then we must continually balance our body.

The best supporting level for a person standing is the horizontal, but he is also able to stand on an inclined ascending or descending plane, in which case the angle of inclination must not be more than forty-five degrees, because the effort of keeping the balance becomes irksome.

Upright standing is principally produced by the extensors of the legs and back, besides all the other muscles which act antagonistically; if this extension suddenly ceases, as in a fit of fainting, the body always falls forward. Besides the change in the position of the feet, the standing posture is much aided by leaning on a fixed object, and still more by resting with the arms upon any object, which diminishes considerably



the weight resting on the feet ; this is practically known to all who are obliged to write much, in a standing position.

In water, the standing position can be retained with certainty only so long as the fluid reaches the abdomen ; in deeper water we are often raised, according to the hydrostatic laws.

Crouching belongs also to the standing position, because the point of gravitation is in the soles of the feet, on which the body rests, in a kind of crooked sitting position.

The standing position, in consequence of the weight of the body resting uninterruptedly only on the feet, if this posture be the usual one, and continued for a long time, disposes to swellings, œdema, varices, ulcers, weakness, trembling of the feet and legs, as for instance, in laundresses, printers, lithographers, and other trades, where long continual standing is maintained ; all these diseases can be either entirely prevented or their development retarded by walking, bending, stretching, rubbing the legs from time to time, at definite intervals, and by sponging them, twice or thrice a day, with cold water.

#### WALKING.

Walking is the faculty of moving the whole body from one place to another, or of changing place, or locomotion. Man has properly only the two lower extremities for locomotion, because his posture is erect, and if he makes use also of the arms, he does it only in consequence of weakness of the legs, which is natural in childhood, because the new-born child has not the faculty possessed by most quadrupeds, of walking immediately after its birth, but acquires it only later, and by degrees, after the period of suckling.

This incapability often becomes natural in many diseases of the legs, or in the entire absence of them ; here the arms are the necessary and sole substitutes for a

spontaneous locomotion. In the healthy state we also make use of the arms, as organs of locomotion, if we wish to pass through a low narrow passage, and if the passage be very low, we bend the arms and legs, by which the fore-arms, the elbows, the knees, and toes serve as supporting points; we call this movement *creeping*.

Walking with crutches not only in effect elongates the arms, but at the same time supports a part of the weight of the body that leans on them with the armpits. The use of crutches is very dangerous; they should never be employed except in cases of fractures of the lower extremities, because the more the body weighs on them, the sooner will the thighs and legs lose their power, and waste away; many muscles of the chest are also injured by the compression they occasion.

Walking is aided by leaning on a stick, or on another person; in the first case the elongated arms represent the anterior feet of quadrupeds, in which the weight of the body is distributed equally over the four legs, and by which the safety of walking is increased. This is the reason why patients or weak persons necessarily require a guide, or one or two sticks; which is also the case if persons wish to be more secure when walking. Walking begins from the standing position, and as we said that generally this is either with one foot forwards, or with both feet in the same line, we begin in the first case with the foot which is put forward, because the weight of the body is already more on the posterior foot, and in the second case, it is a matter of indifference which foot we begin with. As soon as the raised foot again touches the ground with the sole, the body, which appears to fall forwards, is checked in this movement, the weight of the body rests now on this foot till the other advances.

Besides the principal direction of walking, which is parallel to the plane of the ground, we observe a three-

fold movement, by which this principal direction is modified.

1st. An alternative one, to the right and left, arising from the change of the centre of gravitation from one foot to the other.

2nd. A turning movement sideways of the body, combined with the first, by which the anterior part of the body turns to the right or left.

3rd. An alternative movement, upwards and downwards, depending upon the slight sinking which follows every step.

The peculiar walk of every person, by which we can distinguish him from others, depends upon the amount of the modification necessarily produced, according either to his special formation or to his custom, by the three mentioned movements, of which the first two give the straightforwards walking a serpentine and sideward direction, and the third an undulating line, very visible in the position of the head. The apparently total want of these three accessory movements, or if they are very little perceptible, constitutes *stiff* walking; if these movements are moderate we see the *cautious* walking, which becomes *slinking* if it is at the same time accompanied with small steps. If the alternative movement to the right and left prevail, the walking becomes *staggering*; if the sideways-turning movement predominates, it is the *fawning* walk, as in persons who bear a great weight before them, with their arms in their lap; and if the alternately up and down movement predominates, we call it a *floating* walk, which is seen principally in very corpulent persons, as the *stamping* walk, in which the whole weight of the body sinks at once on the foot; and if the whole sole of the foot steps at once on the ground, we call it *pawing*, as we generally see it if, in walking, a heavy burden has to be moved along on the ground, as for instance, in the drivers of a wheelbarrow. We call a step the distance between the feet during walking,

which is represented by the line opposite to the angles formed by the legs, which angle in a healthy body is, without effort, about sixty degrees, and the line from one heel to the other is equal to twice the length of one foot. The distance between its point and heel is called the length of a foot.

From the heel of the posterior foot to the heel of the anterior, the half pace has one length, the small pace two lengths, the middle or average full pace three, the large pace four, the very great pace five.

Persons who walk well never put the points of their feet straightforwards, but outwards, in an angle of twenty to thirty degrees, in order to be more secure during the walk.

Walking on the toes is employed by persons who wish to go softly and easily, and also by persons who wish to be taller, and who think by so doing to look better; but as they would very soon become tired, they wear high-heeled boots or shoes, which have this bad result (particularly if the heels are not wide enough), that the walking becomes more uncertain, and the strain upon the muscles of the feet must be greater, in order to maintain the balance.

Our walking is generally forwards, but we are able also to walk backwards and sideways, which we generally do in order to avoid objects which hinder us from going on in a straight direction; we walk backwards either if we fear to be injured in the place in which we are, or if we wish still to look continually on the object which induces us to leave the spot, or if we wish to see better or to gain a greater horizon on a certain object or space which is immediately before us.

Walking is also different according to age; a child walks in its earliest infancy, with the feet put far apart, because by leaving a larger basis it is more secure, and will not so readily fall down; its walk is always tottering, the steps small, but quick, because it learns



only by degrees to put the weight on one foot; children generally learn to run small distances before they walk, and to walk before they can stand. The soles of the feet have always a disposition to turn the points inwards, which often becomes a habit, and is very bad, because the muscles of the internal sides of the articulations of the feet become shorter and contracted, while those on the outside are in continual extension, and sooner or later lose their contractility; in the beginning this fault is easily corrected by frictions on the contracted parts and methodically stretching the foot outwards. A child easily falls forwards; but this is generally not dangerous, as the legs being short, the fall is not from a height.

The walking of adults is more pleasant and free the nearer the centre of gravitation is to the mesial line of the body during the movement. The following is a sketch of a good attitude during walking: the head upright, with the countenance directed forwards; the shoulders drawn backwards; the chest pushed forwards, without hanging over; the abdomen retracted; the knee stretched straight when stepping, and a little bent when going on; the sole of the foot a little outwards when stepping; the weight of the body equally distributed upon the heels and the anterior part of the foot; the steps of equal distance and direction; while advancing, the feet should be as near as possible, so that the heels may be very close to each other without touching, the arms freely hanging down and passive during the movement. This passiveness of the arms produces their swinging, which is not a habit but a natural movement, and is like the swinging of a pendulum; the arm corresponding to the first advancing foot begins to move first, because the stopping of the foot after the step reacts more quickly on the arm of its side than on that of the other. The swinging attains its highest degree only after some steps have been made, but while walking, it depends upon our own will to increase or suppress entirely these movements of the arms.

Old persons walk (according to the increased weakness of their muscles) like very tired or sickly individuals; the walk is shaking, the steps shorter, the head sinks forwards, the chest hangs over, the knees fail, and the body sinks easily forwards or sideways, if without the assistance either of a stick or a person; at the least shock an old or invalid person would fall. In consequence of his little flexibility, it is with difficulty he gets up, and he more readily injures himself, because the body falls in a larger arch.

The character of walking in women is modified by the greater distance of the hips and the closer approximation of the knees, which are more perceptible chiefly during the quick walk, which they substitute for the longer steps, because they are prevented making long ones, in consequence of the breadth of their hips. If they are at the latter end of pregnancy, they must keep the upper part of the body a little backwards, because the weight of the body is much increased forwards.

*Effect.* The man who walks, actively moves all the muscles of the lower extremities, with more or less exception of the rotating muscles as well as of the adductors of the thighs; the muscles of the trunk, neck, and throat are also for the most part in active motion, because the trunk is upright, and must be kept in a constant balance by the respiration, which is increased, particularly if we walk in the open air, which contains more oxygen; all the muscles of respiration become more active, and in all these organs the formation of plasma (new formation) is increased. The muscles of the arms remain passive, and by their pendulous movement during the walk, which is a kind of passive rolling, the venous absorption is increased in all their parts, even to the cells of the bones. Every time the foot is planted upon the ground, principally in such persons who tread firmly on the whole foot, and also with the heel, all the organs in the cavities of the abdomen, chest, and head suffer a concussion, and

mutually a pressure, which also increases the absorption process in them.

Walking consequently increases—

1st. The formation of plasma in all animal muscles of the body, except the rotating muscles and adductors of the thighs, and all the muscles of the arms.

2nd. The absorption in all organs of the arms and of the three principal cavities of the body. As the formation of plasma increases the amount of arterial blood, and the absorption, the re-formation of the organic parts, the changes of the particles must necessarily increase, in a high degree, in the body of a walking person, which explains our greater consumption of air and food.

Unfortunately very few medical men sufficiently understand the immediate influence of walking, and non-professional men generally have no just idea of it; these are the reasons why many weakly-constituted persons, although they take a good walk, still complain that they feel no good effects from this exercise, which is a very excellent dietetic and preventive agent for healthy persons, if not too immoderately used; but persons who are obliged to walk, owing to their occupations, should also make other active movements. For invalids and sickly persons, walking is one of the most composed movements, and yet of a partial character, in consequence of its being a continual repeated movement; it is in some cases only very conditionally a good dietetic or medical agent, and we may boldly assert that ninety out of a hundred persons would do better if they would first try to improve their health, either by other movements or another treatment, before they begin their daily regular and, for them, much too long wanderings, which often prove so injurious, principally in consumption, abdominal, and other diseases; therefore such sickly weak persons whose occupation is not conjoined with sufficient bodily exercise, should not, without the necessary knowledge of the state of their health, prescribe

for themselves long and fatiguing walks, which must hurt them. We see the same often in hysterical ladies who dress very fashionably, that is, with their chests extremely compressed by their corsets, which prevents their taking in a deep breathing at all; these in vain seek to obtain a good effect from walking, if the movement is not suitable for their disease.

Too long-continued walking has bad results, of a kind similar to those of standing; the curative agents are the same, to which we may add the horizontal rest of the legs as one of the most necessary,

If we recommend walking for medical purposes, the temperature, density, purity, humidity, and current of the air must be taken into consideration, because its salutary effect will be more or less influenced by the different modifications of these qualities of the air. Often walking, as a merely mechanical act in itself, is very useful; as the celebrated J. P. Frank says, we daily see many children with large stomachs, who suffer much from constipation of the bowels, become better as soon as they begin to walk, and to move more freely.

#### SITTING.

We call sitting generally that position in which the nates and the posterior surface of the thighs are (either both or each of the named parts) the supporting points, on a somewhat higher level than the feet. If the level of the seat is not elevated, the heels touch it with their posterior edge; the legs, bent at the knees, are directed a little outwards; the knees are generally some inches distant from the ground, and form with it a more or less acute-angled triangle; the points of the feet look outwards, and in this case only the nates are the supporting point; this is generally the natural position of the legs. The attitude of the upper part of the body is the same as that we described in the walking of adults, and is modified by the age and strength of the person.



Sitting is rendered easier by leaning the arms and the back against something, and in this sitting position we generally find old people and invalids. Those who are obliged by their occupation to be in a sitting position cannot lean at all, or only very imperfectly, and sit therefore either straight or generally with the upper part of the body more or less bent forwards. According to the particular constitution, sitting gives rise to many diseases, varying with the occupation; the student who works more with the head, who reads or writes near the table, suffers, besides the immediate consequence of the continual pressure produced by the angles on the nerves, vessels, and other organs of the abdomen, from bad digestion, bilious disorders, gravel, flatulency, piles, swellings of the liver, and spleen; constipation of the bowels and other abdominal diseases; he is liable to excitability, melancholy, headache, giddiness, singing in the ears, bad temper; the head hangs forward, because the continual extension of the muscles of the neck produces weakness and less contractility, therefore such persons cannot keep the head erect; the chest becomes narrow, the breathing difficult and asthmatical, the shoulders come forward, the trunk is stooping, the legs emaciated, stiff, and inflexible; the skin dry and rough. This is in general a mere outline of bookworms and other learned men, who neglect their physical development, either through idleness and ignorance of these bad consequences, or through their being entirely absorbed by their intellectual studies. People who sit continually and work also with their arms, like weavers at the loom, often become disposed to many diseases of the organs of the chest, as hæmoptysis, phthisis, palpitation of the heart, etc., diseases generally of a congestive or inflammatory character, produced by the artificial stagnation of the blood in the abdomen, and the activity in the chest increased by the movements of the arms. If only one or the other arm is exclusively engaged in the trade, deviations of the

spine, with or without any disease of the chest, undermine the general health, which nothing will remove, except change of occupations; needle-women, copiers, drawers, etc., belong to this unhappy class.

The muscles of the anterior part of the trunk are only in the first moments of sitting more active, afterwards the weight of the body is equally kept upright by the muscles of the trunk, of which the posterior are most on the stretch, when the trunk hangs forwards. If, in the lean-sitting position, the angle formed by the back and the plane of the seat is less than forty-five degrees, the position becomes a lying one.

#### LYING.

Lying is the position in which the whole or part of the body rests along its longitudinal axis on a horizontal plane, which may be more or less inclined, but never more than in an angle of forty-five degrees with respect to the ground. In the healthy state we generally lie sideways, or on the back, very seldom on the anterior part of the body, and we choose the lying position only when tired, and if we wish to restore our strength by rest and sleep, which is often the case in the first or last hours of the night; all muscles which are under the control of our will are passive principally in the position on the back. Lying varies much according to the state of health, and habits, which it is very important to know, for the diagnosis of diseases; we shall do no more than allude to the fact, that lying, if too long protracted, produces on the prominent supporting points irritation, congestion, inflammation, and ulceration, as is the case with patients suffering from spinal disorders, under orthopædic treatment, who are often obliged to maintain the lying position for years, and to suffer besides many different tortures.

## RUNNING.

Running differs from walking only by the more frequent repetition of movements which are in other respects analogous to those of walking. The body is more or less (according to the quickness) bent forwards; the chest expanded; the upper parts of the arms well drawn backwards and kept close to the sides of the body; the lower parts of the arms moveable, in order more easily to make shorter or longer steps; the feet directed outwards, because the wrist and inside of the foot develop more elasticity; the mouth should be kept shut.

*Effect.* While running, the whole body is acted upon by strong and continued vibrations, following each other with rapidity, but the lower extremities are not alone in movement, because while the running lasts, a strong and permanent contraction of the muscles of the shoulders, arms, and fore-arms exists, which secures the immobility of the thorax, towards which the arms are approached. Running possesses great influence on the development of the respiratory organs if methodically used, and properly regulated as to quickness and duration.

Running may be facilitated—

1. By keeping the head and shoulders backwards.
2. By not swinging the arms too much, which destroys the immobility of the thorax, which is the *point d'appui* of the strength, retaining the pelvis, and consequently hindering this last from becoming a sure point of support for the legs.
3. By not increasing unnecessarily the muscular contractions of the lower part of the leg, by raising them too much towards the upper and posterior sides of the thighs.

*Running up hill* is done with short, very quick steps; the angle of the ankle-joint is more acute, the body is bent forwards, more or less, according to the greater or smaller inclination of the plane.

*Running down hill* is done with short and very quick steps; the weight of the body is kept a little backwards.

*Transversal running* on an inclined plane, the weight of the body is kept more to the higher part of the plane; the whole position is very like the step-walk-standing position, with this difference, that the two anterior points of the soles of the feet are the supporting points.

#### DANCING.

We understand by dancing a series of movements, acting generally on the whole body, executed in a certain rhythm regulated by musical tunes.

Dancing is properly an expression of joy, and was probably at first only a mixture of jumps and runs, accompanied by different gestures and positions, executed neither in a certain rhythm nor harmony with the tune. Some of the Greek authors mention more than one hundred and eighty different dances, because all we call pantomime belonged to dancing. We cannot even mention all the different dances, we will therefore restrict ourselves to saying a few words about the influence of dancing, which is similar to that of walking, from which it differs in the more energetic execution of quick flexions and extensions of the limbs, by which the body, being every moment suspended in the air and then again touching the ground, undergoes more violent shocks, vibrations, etc., of its mass; the circulation of the blood is more rapid, the breathing more frequent, the perspiration more abundant, in consequence of which the activity of the chyliferous vessels is increased, by which also the digestion becomes quicker, and the appetite and thirst increased.

Dancing acts principally on the muscles of the lower part of the trunk, of the thighs and legs, the size of which is considerably increased on account of the upper part of the trunk and arms; which unequal development



gives to professional male dancers the aspect and form of women, because the enormous increase of the muscles round the hips, as well as of the nates, form the greatest contrast to the thin, meagre neck and slender shoulders. Therefore it is necessary for all whose exclusive business is dancing, to combine trunk and arm exercises, in order to produce an harmonious development of the whole body. If we wish this exercise to be useful to health, it must never be done immediately after dinner, or all night long, in close, narrow, unventilated rooms, full of dust and animal exhalations, while we are crowded together, and dressed according to our unhappy fashion, in such a manner that we cannot breathe freely.

The bad effects of dancing are principally owing to the neglect of the above-mentioned rules.

The ancients danced during the day in large public places, in a certain part of the theatre, called the orchestra, and afterwards in their large gymnasia.

#### FENCING.

In order that this exercise may answer the purpose of developing our body harmoniously, it should be performed as well with the left as with the right arm, otherwise we shall see the one side more strengthened and developed than the other. It acts principally and directly, not only on the muscles of the extremities, but indirectly on the lungs by the greater development of the thorax.

Fencing, as well as all violent exercises, and principally those which provoke a direct rivalry between two persons, has such an extraordinary nervous influence upon our brain, excited by the desire of triumphing, that the vital activity is immensely increased thereby. The eyes, ears, judgment, stratagem, etc., are all engaged during this exercise, which is also, therapeutically, very useful in a predisposition to consumption, scoliosis, and other diseases.

## RIDING ON HORSEBACK

Is a passive-active movement, and is different according to whether the rider rides sitting entirely on his nates or only partially. In the first or French method, the stirrups are longer, and the whole pelvis is the principal supporting part; many of the horse's movements are transferred to the trunk, also the shocks or vibrations produced by them act more strongly on the internal organs; the muscles of the trunk and inner sides of the thighs are almost exclusively engaged in the active movement; while in the English fashion of riding, the rider has in the stirrups a point of support, in consequence of which his body is raised at every movement of the horse, because the nates are only slightly supported, for which reason he must employ more active movements, in order to keep his upright position, but he has the advantage of opposing more effectually the shocks of the horse, and of resisting longer the fatigue they produce. During riding the muscles of the posterior aspect of the trunk, of the internal side of the thighs, are contracted, as well as the lumbar muscles and those of the arms and legs. There is in all parts of the trunk an almost fixed state of contraction, which produces an exceedingly active immobility, in which the whole spine must be kept by the different antagonists acting upon it.

The effect of riding on the healthy and diseased body was known in the most ancient times, and Socrates said that it not only produced health, but at the same time bodily strength.

Londe says, that the general movement produced by moderate riding is one of the most useful means of fortifying almost all the organs of the human body, and it is generally this tonic effect which renders it so important to weak persons, to convalescents, and principally those who suffer after protracted diseases, from a general diminution of strength. Riding is a very good preventive

against many diseases of the chest, because the position during riding contributes very much to the expansion of the thorax and lungs. It is evident the effect of riding depends upon the different form, temper, and movements of the horse, of the ground over which we pass, of the time and quickness, etc.

#### SWIMMING.

We have mentioned already partial movements of the arms and legs, which belong to swimming; here we mean the swimming of the whole body in water, which is properly a mixed exercise, although it seems to be merely a passive one if we swim on the back, without moving ourselves at all; but also here the muscles of the trunk and legs must act in order to retain the extended horizontal position, while the body is moved by the current of water in its direction.

According to the different methods of swimming on the abdomen or back, with two, three, or all the limbs, with both arms at the same time or alternately, more or fewer muscles become active, whereby the muscular strength in general is developed, which influence is increased by the effects of the cold water in which we swim.

The importance of this exercise was so highly estimated by the ancients, that the Greeks believed it as necessary a branch of education as reading itself, and an old Greek proverb, "he has learnt neither reading nor swimming," expresses ignorance, and is equivalent to our saying, he can neither read nor write.

#### RIDING IN A CARRIAGE

Is an entirely passive movement if the carriage is suspended, and produces all the good effects of passive movements, which makes it so useful to the child as well as to the old and convalescent, the more so as the influence of the air and changing scenery acts so beneficially on

the senses. If the earriage is not suspended, we contract involuntarily some muscles, principally those of the abdomen, in order to withdraw us from the disagreeable effect of the shock, which is transmitted to the body through the nates, the soles, if they touch the ground, and the back, if we lean. The shock through the soles is often transmitted to the head, which then aches, as well as the body, which is almost bruised, as persons not accustomed to riding in an unsuspended carriage express their feeling.

The different gymnastic games, as practised in the Greek and Roman palæstra and gymnasia, belong to this plan also, as well as those of our schools, which being generally performed in the open air, combine the salutary effect of this and the movements, if chosen according to the age, strength, and constitution of the persons.

#### SAILING, ETC.

Being on water, in a ship or boat, is the softest passive movement, if we are on quiet running water ; which may be combined with active movements of almost the greatest number of our muscles, if we choose to row ourselves.

The pathogenetic influence, on the healthy, of the floating movement on the sea, and its curative power in diseases, were known and employed from the most ancient times ; unfortunately it is often indiscriminately chosen, without well considering whether the often very violent passive movement, the evaporation of the sea-water, and the difference of climate are really suitable to the patient or not.



## CHAPTER III.

### THE TREATMENT BY MOVEMENTS.

1. *The general rules for the development of the healthy body* are, according to Ling—

1. The harmonious development of all parts of the human body, by well-determined movements.

2. Well-determined movements are those which are carefully selected in relation to each individual body to be developed by them.

3. The body is justly developed, if all its parts are in the most perfect harmony with each other that is possible, according to the peculiar faculties of every person.

4. The human body cannot be more developed than its faculties permit.

5. By want of exercise the natural faculties of man can be suppressed, but not extinguished.

6. By exercises erroneous and contrary to our designs, natural talents can be even prevented in their development, therefore improper exercises contribute to produce, with respect to the harmony of the bodily development, more injury than utility.

7. Every partial (one-sided) development makes the movements more difficult as well to learn as to retain them; a manifold development, on the contrary, simplifies and facilitates them.

8. Stiffness or immobility in a certain part of the body is, in many persons, generally only a partial over-strength, which is always accompanied by a corresponding weakness in other parts.

9. The greater strength of one part can be diminished, and the least strength of other parts increased, by equally-distributed labour.

10. The individual strength and weakness are not determined by the larger or smaller superficies of certain parts of the body, but constitute the relation between all parts of the body.

11. Every true and increased strength is a simultaneous concentration in the action and reaction of the parts, which necessarily shows itself at one and the same time, if the strength attains the highest potency.

12. Health and strength in its height are therefore synonymous; both depend upon the harmony between all parts of the body.

13. If we begin with the simplest elementary movements, we can proceed by degrees to the most difficult, without the least danger, because the individual knows his strength, and as well what he does as what he is able to do.

No movement is too simple, because the apparently most inconsiderable is as important as the artificial and composed. Many believe, for instance, that walking is a very easy exercise, although it belongs to the most composed, because it is an equal balancing and changing of the weight of the trunk on the lower extremities; for continuing this balance and change of the weight, many simple movements are necessary, which must proceed in order to develop the equilibrium between the single parts, as we have daily opportunities of seeing.

II. *The three fundamental principles of the medical treatment by movements* are—

First. To strengthen and cure the body by movements acting on the system of blood-vessels, by promoting and regulating the reproductive processes.

Secondly. To strengthen and cure the organism by movements acting on the nervous system, by promoting and regulating the nervous activity.

Thirdly. To strengthen the organism itself, and cure by movements acting on the blood and the innervation, which is but another expression of the physiological

principle that life can be preserved and cured only by life itself.

Most errors are committed in the different treatments by confounding the diseases with the symptoms. Ling therefore gives the following hints, in order to contribute to correct these errors. If the dynamical agent is the predominant, the disease shows itself by more mechanical phenomena; if the mechanical agent is the strongest, the phenomena are more chemical; and if the chemical agent is prevalent, we see more dynamical symptoms.

We know by experience that by terror, rage, joy, anger, etc., the force of the muscles is either too much increased or entirely lost—the pulsation of the heart is very much accelerated or very much retarded—the breathing either irregular or difficult, etc., in addition to which principal mechanical signs, there is afterwards a dynamic action, often also chemical, but exhibited in secondary symptoms.

Suitable exercise produces appetite, good digestion, perspiration; too great an effort, or a shock, produces a dislocation, bad assimilation of the food, inflammation, formation of matter, etc. In this latter case we must not confound the stagnation of the blood produced by the external shock with the shock itself, because the organic reason of the following chemical symptoms depends on this mechanical change of the blood, and not on the external impression.

Spirits, spices, etc., and similar chemical causes, produce at first more dynamical symptoms, as too great sensibility, sensitiveness, vivacity or fatigue, good humour or melancholy, etc. As an exception to the above-mentioned observations, we must quote all more violent influences, either of a mechanical nature, like violent shock, pressure, contusion, etc., or those of a chemical nature, such as poisonings, cauterization, etc.; because in these different cases the disease itself and its symptoms are manifested in the same vital agent. We see the same

thing, in the case of any disease that is in its highest degree, when it is stronger than the organism; as, for instance, in putrid fevers, or very violent gout, in which we observe the symptoms predominant in the agent in which the disease itself is.

The movements which we use to cure diseases are, as well as the pharmaceutical substances, not prescribed by chance, but according to the diagnosis of the disease, and the constitution of the patient; they are put in a certain order, and form a prescription of movements, which is to be followed exactly, and not changed, excepting the medical man find it necessary to do so during the treatment. It is requisite that he should understand how to change, at the proper time, the treatment with respect to the one or the other part of the organism. This change must be in a certain proportion to the previous movements and to the present state of the patient; because it is evident that a body, which has become after a long disease unnaturally irritable, principally in certain parts, and which has obtained by chemical or mechanical treatment more activity (that is, more natural irritability in its other parts), is by this total change in a sort of internal revolution, and consequently also must be treated in a manner soothing to this state.

The change must not be in contradiction to the previous treatment, because it is but similar to the rest, which we sometimes allow to a fever patient, in order to observe whether the disease will not change during this rest.

The manipulations must be directed upon the nervous system in general; and if the physician thinks that this treatment is less suitable for his purpose of lowering the blood and muscular systems, he must discontinue all movements every third or fourth day, and then prescribe a lukewarm bath, from three to five minutes. Some time later the treatment is recommenced, in the above-mentioned increasing manner, and some spontaneous



intervals are again permitted, although they do not appear necessary to the patient. According to the difference of the pulse the treatment must be regulated, as well during its increase as its decrease.

#### RULES FOR THE PRESCRIPTION OF MOVEMENTS.

As the difference of age, sex, temperaments, occupations, customs, and other circumstances, do not allow us to give a fixed plan for the prescription, the following rules may serve as a guide.

1. The movements must be chosen according to the nature and the degree of the disease, as well as to the constitution of the patient.

2. The number of movements in the single prescription is to be reduced to its *minimum*; if it is necessary there should be more movements of the extremities, the number can be generally larger, as movements acting principally on the more important organs are used. On an average, there are not less than eight, and not more than twelve movements in a prescription, for which, with the intervals, half an hour or one hour and a quarter is necessary.

3. In hernia and disposition to it, as well as to apoplexy, in diseases of the heart, epilepsy, organic, cerebral, and spinal diseases, and many other complaints, we must be very cautious in the use of active movements.

4. The movements must follow each other in such order, that the effect of the first may not be neutralized or weakened by the effect of the second.

5. Generally the first prescription contains either not any or at the most one or two active movements. The more the health is improved, the movements may become more and more active, while they are, during the convalescence, in a greater number than the passive, and finally, the cure ends with active movements.

6. General active movements with effort must be avoided in all entirely developed diseases in the beginning

of the treatment, because the activity of the lungs and heart are too much increased, and strong congestions are produced, venous in the lungs, and arterial in the diseased parts.

7. The first and last movement in the prescription should always be the slowest.

8. It depends on the result whether a new movement shall be added, or the prescribed movements changed; a general rule is, to change the movements as soon as the patient feels really better, or as soon as he experiences different sensations from the effect of a certain movement.

9. The treatment often begins as a derivative, and then the change in the prescription depends upon whether the derivation is already sufficient, and whether specific or general active movements are necessary.

10. It must be mentioned expressly, whether the intensity of the movement must be less or stronger than in general.

11. The rhythm must be regulated and determined according to a certain time, as in music.

12. The patients often desire the repetition of certain movements, from which they believe they feel good effects; the physician must be cautious in acceding to the patient's desires, unless he is convinced of their usefulness.

13. During the monthly functions, or if the piles bleed, the movements are generally diminished with respect to their quantity and intensity, or sometimes suspended.

*During the treatment itself the following rules are to be observed.*

1. One and the same movement is generally done only once, if the treatment is daily continued, but if the movement is a repetitory one, it is repeated as often as its form designates it.

2. The time, which differs from some seconds to some minutes, must be determined in every movement.

3. Generally, it is enough to execute the prescribed

movements once a day, which is best done in the hours before noon; in single cases, it is advantageous, and even in some it is very essential, to repeat the whole prescription, or only a part of it, several times a day, which entirely depends on the nature of the disease and the patient.

4. The patient must in no movement entirely shut the mouth and eyes, or violently retain his breathing, and if a movement consists of two or more motions, he must again breathe between the single motions.

5. The intervals between the single movements generally last as long as the particular feeling produced by every well-employed movement has not entirely disappeared; that is, as they say, till the movement is assimilated by the organization. During these intervals, it is the best, if he is able to walk up and down.

6. With respect to the diet, it must be strictly observed in the same manner as in any other treatment;—violent movements, working with effort, and sitting up at night, etc., must be avoided in any circumstances, as long as the medical men think fit. Less fatiguing positions and movements, as are used in the ordinary mode of life, must not be avoided, except they do not agree with the nature of the disease.

7. The rules with respect to drink, food, and dress are the usual. If the treatment by movements be recognised as really necessary in certain diseases, it depends upon the circumstance whether it may be used alone, or in combination with a treatment by medicines. This latter is to be avoided as much as possible, if the first is sufficient; but if such is not the case, remedies are to be chosen which do not hinder the action of the movements. To this class belong, as we know by experience, *Mercury*, *Iodine*, *Sulphur*, etc., which have such an influence upon the organization, that during their use, and for some time afterwards, the movements principally lose their reproductive power, in the formation of

new textures, and their effect is neutralized. Bleeding and other weakening curative methods are incompatible with the cure by movements.

MOVEMENTS FOR THE DEVELOPMENT AND STRENGTHEN-  
ING OF THE HEALTHY BODY.

We have extracted the following movements from Ling's "*Règlement*" (a book introduced many years ago into the Swedish army), for the sake of enabling the physician to prevent diseases by recommending the simplest movements, and also because we consider them to be the A B C of the therapeutic movements, which are unintelligible without a previous knowledge of these. Convinced of their great advantages if introduced into every school, we select the most important, and on that account subjoin a copy of a pamphlet proposed originally for schoolmasters, with the view of giving them a very short method in the instruction of their pupils.

1. The aim of these exercises is to develop the human body harmoniously by well-defined movements.

2. Our body so developed possesses real strength, that is, such strength as is equally distributed in all directions, and which enables us to support more easily the differences of temperature, bodily fatigue, and other external influences.

3. A strength so distributed preserves us in good spirits, and makes all our movements easy.

4. The exercises are divided according to the principal parts of our body, viz. into those of the arms, legs, head, and trunk; but as all these parts must be in perfect harmony, it is not a matter of indifference whether we exercise ourselves only in certain movements, because our body would not so obtain the equal development desired.

5. In the beginning the positions must be learned.

6. No movement is to be done with any effort.

7. The breathing must not be suppressed during the exercises.



8. The dress must be loose. The best dress for ladies is a blouse (vide figure), without stays and bustles, which become very soon superfluous, if these exercises are well done, and used in moderation.

9. The movements with the head and trunk must be done slowly, as well as those of the legs, by which the body is raised or lowered; the more the strength and flexibility increase, the slower the above-mentioned movements must be executed.

10. The movements with the arms are done quickly, and the quicker they are, the more the strength is developed.

11. The movements must vary, and one and the same movement must not be repeated oftener than two or three times one after the other.

12. The movements, although changed, must not be executed only and principally with one part, because these would become stronger than all the others, and would prevent the harmony of the body.

13. The exercises must be performed by healthy persons, according to the numeric order of the tables of exercises; we should not proceed to a following table before we understand the execution of the preceding one.

14. Between the single exercises an interval of half a minute to two minutes is desirable.



15. Not more than ten to twelve exercises should be done at once each day.

16. All persons who feel indisposed, or in whom one or another part is weaker, should consult the physician acquainted with the effects of movements, as to whether and as to what exercises they shall use, for otherwise exercises of this kind become injurious.

17. The following exercises are called free movements, because they are executed without the help of any technical apparatus.

Their great advantage consists in this—

*a.* That the movements being very simple are easily understood, as well as easily performed.

*b.* They can be executed at the same time by a great number of persons, in which way much time is spared.

*c.* The expense of the apparatus and machines is saved.

*d.* The free movements can be executed in any place, as well in the open air as in-doors; even in a room the possibility of making these exercises is not at all interfered with.

*e.* As every motion of a free exercise is to be observed exactly, and to be executed (if there are many persons) at the same time, all must accustom themselves to a certain attention and precision, by which means the sense of order is developed, and the attention excited.

*f.* The free movements produce an agreeable feeling in the movements of the body.

*g.* They promote, more than the movements on machines, a good posture of the body, and an appropriate appearance and deportment in ordinary life.

18. Every movement which is used for the harmonious development of our body, must be a definite movement, that is, it must have a definite form.

19. Every definite form has a definite point, in which it begins, and this is the commencing position.

20. All the positions in which our body, or a part of

it, is between the commencing and final position, are called intermediate positions.

21. The position in which the moved body returns to the state of rest is the final position.

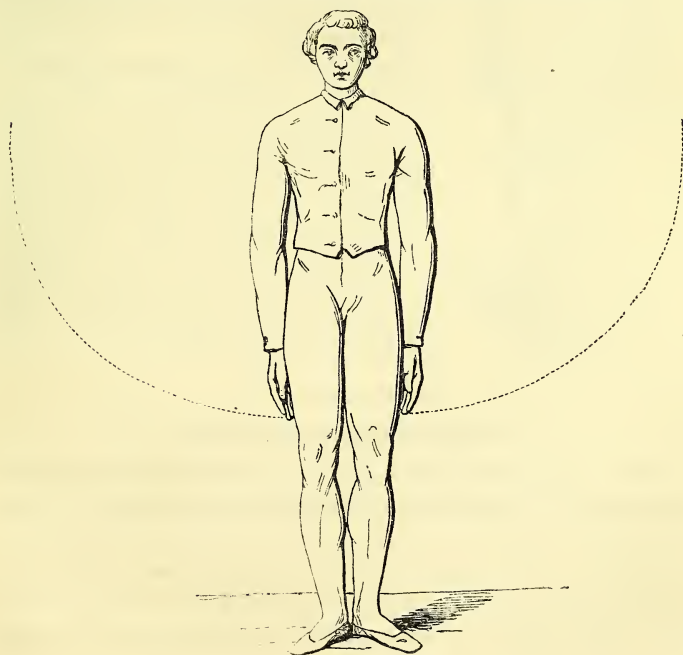
22. All exercises which are composed of different movements are divided into different spaces of time, during which a certain movement is executed; these divisions of time are called motions, and are indicated by the numbers of "one, two," etc.

#### THE POSITIONS.

The positions of the body with respect to the basis are different, according to whether the feet touch each other, or there is a certain distance between them.

#### FIRST POSITION.

*Rectangular heel on heel, or fundamental position.*



The feet touching each other with the heels, and forming a right angle. This position is definitely chosen as the first in every standing commencing position, and called *fundamental position*.

#### SECOND POSITION.

*Feet close together.*



The feet being in the rectangular position, heel on heel, the toes a little lifted from the ground, and immediately both feet turned quickly on the heels, so that the inner parts of the feet touch each other from the heels to the toes. If you resume the first position, this is expressed by *feet outwards*, and the feet are turned in the above-mentioned manner, but in an opposite direction.

*Positions with a distance between the feet.*

The distance may be one, two, or three times the length of a foot from the toe to the heel, and the direction of the feet remains either as in the rectangular, or as in the position with the feet close together, with respect to each other.

#### THIRD POSITION.

*Right or left foot forwards.*

The above-named foot is placed at double its length (measured from the heel of the other foot) forwards in the same line as the one in which it was in the previous position. For instance, if it were in the rectangular position, the foot always retains the rectangular direction, with respect to the other foot; if the previous posi-



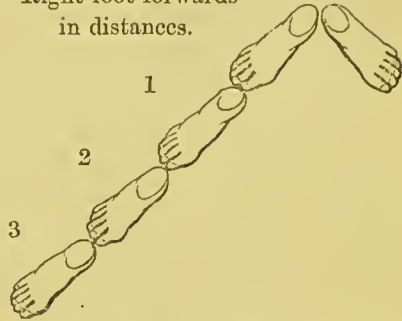
tion were *feet close together*, the feet remain in the same line.

## FOURTH POSITION.

*Right or left foot completely forward.*

Is the same as No. 3, only the distance is three times the length of a foot. The weight of the body is placed on the fore foot, the knee of which is bent perpendicularly to the in-step; head and shoulders remain immovable; the

Right foot forwards  
in distances.



trunk and the hind leg in a straight line, inclined forwards. If you wish the advanced foot placed back, this movement is indicated by *right or left foot placed back*, after which the above foot must be placed by a short step near the other, which remains quiet all the time.

If the above-mentioned distance should be taken in the position with closed feet, the foot which is to be moved must be in a straight line before the other, which remains quiet. If the foot is to be drawn back, the position with closed feet must be resumed, according to the preceding direction of *right or left foot placed back*.

Left foot  
forwards in  
distances.



## FIFTH POSITION.

*Feet alternately put completely forward.*

The same position as No. 4, in two motions.

First. The foot pushed forwards is again placed in its former position.

Second. The other is to be placed forwards in its own direction, as far as the distance is in which the foot drawn backwards was before.

## SIXTH POSITION.

*Feet placed apart.*

Feet placed apart and straight, from the position *feet close together*.



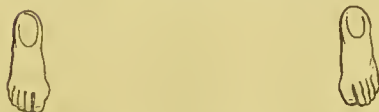
In one distance.



In two distances.



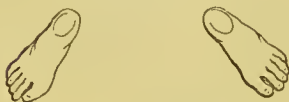
In three distances.



Feet placed apart from the fundamental position.



In one distance.



In two distances.



In three distances.



In two motions. The desired single, double, or triple distance must be taken between the feet, as well in the fundamental as in the position with feet close together.

First motion. The right or left foot is placed apart, at the distance of the length of a foot, to the left or right, so that the heels remain in the same direction, and that the angle of the feet does not become altered.

Second motion. The left or right foot must be placed to the left or right at the length of a foot, thus the distance between the feet is now twice the length of one foot, and the weight of the body equally distributed on both legs.

If the fundamental position is to be resumed, this is indicated by *feet placed together*, in two motions.

First. The right or left foot is placed inwards, at its own length in the former direction.

Second. The left or right foot is replaced in one length to the right or left, with quick step.

Hands on the hips.



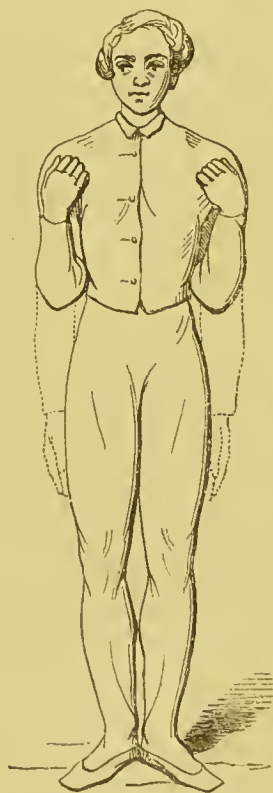
In all the preceding positions, we have more strength if they are combined with the following position.

#### SEVENTH POSITION.

*Hands on the hips, or hips held.*

Both hands are raised and clasp the haunches, with the thumb backwards, the fingers forwards, the inner part of the hand resting on the foremost edge of the hip-bone, the elbows in the same level with the shoulders, which must be kept down, and drawn backwards.

Flexion of the arms upwards.



#### MOVEMENTS OF THE ARMS.

I. *Flexion of the arms upwards*, in one motion. The ordinary attitude of the body is standing with the arms hanging down at the sides, the first movement is therefore a flexion, which is performed with both the elbows held closely near the body, by which we learn to collect our strength. The movement is as follows.

The elbows are bent quickly, well drawn backwards, and put close to the trunk, so that the hands come upward, and remain quiet; the fingers are bent

easily, the nails toward the arms, in the cavity of the arm-pits; the knuckles consequently outward, the shoulders well drawn back, down, and immovable; if the fundamental position is to be taken, this movement is indicated by *arms extended downwards*, in one motion.

The lower part of the arm is extended quickly down, so that it is again in the fundamental position, with the hands near the thighs, while at the same time the elbows and upper part of the arms remain immovable and well drawn back.

## II. *Extension of the arms upwards*, in two motions.

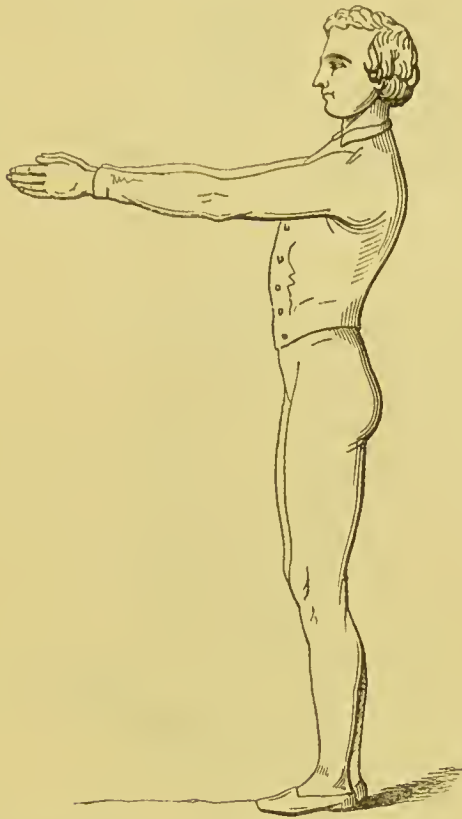
Extending movements of the arms are either horizontal or perpendicular; the perpendicular extension is either upwards or downwards.

First motion. Arms bent upwards.

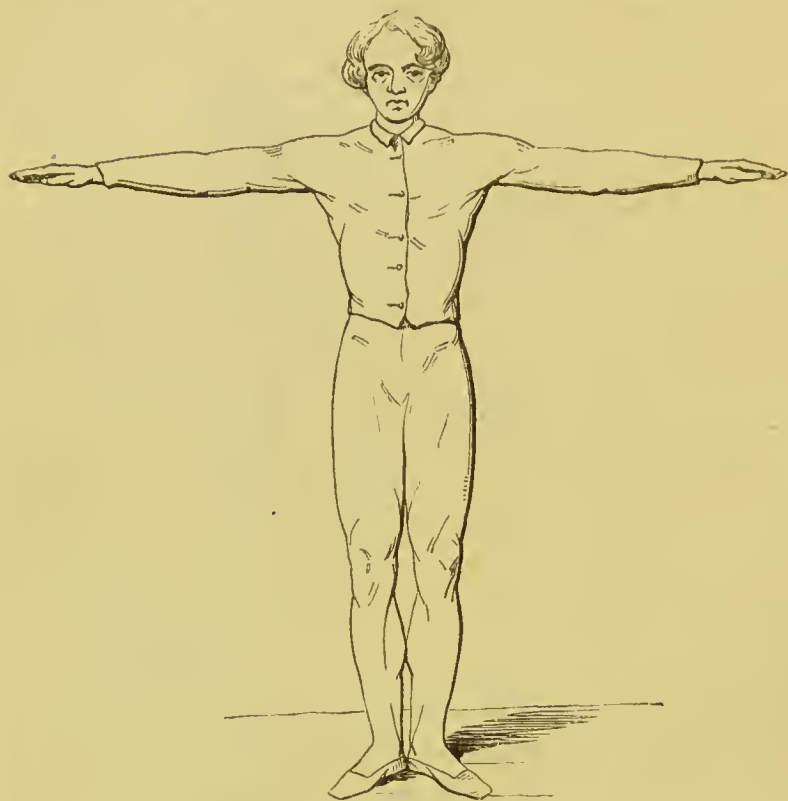
Second motion. Arms strongly extended upwards, and perpendicularly placed close to the ears, so that the distance between arm and arm corresponds to the width of the shoulders. If the arms are to be extended down again, this is done in two motions; in the first we put the elbows quickly to the sides of the trunk, so that the position of the arms is similar to *flexion of the arms upwards*. The second motion is similar to *extension of the arms downwards*.





III. *Extension of the arms forwards*, in two motions.

The first motion is similar to *flexion of the arms upwards*. (Vide illustration, page 129.) In the second motion the arms are extended straightforward, parallel to the ground and to each other, the hands being directed inwards.

1V. *Extension of the arms outwards*, in two motions.

The first motion is similar to *flexion of the arms upwards* (vide illustration, page 129); in the second motion, the arms are quickly extended apart, at an equal height, and in a line with the shoulders, which are well drawn back, with the shoulder-blades close together; arms and fingers are completely extended, and the palms of the hand directed downwards.

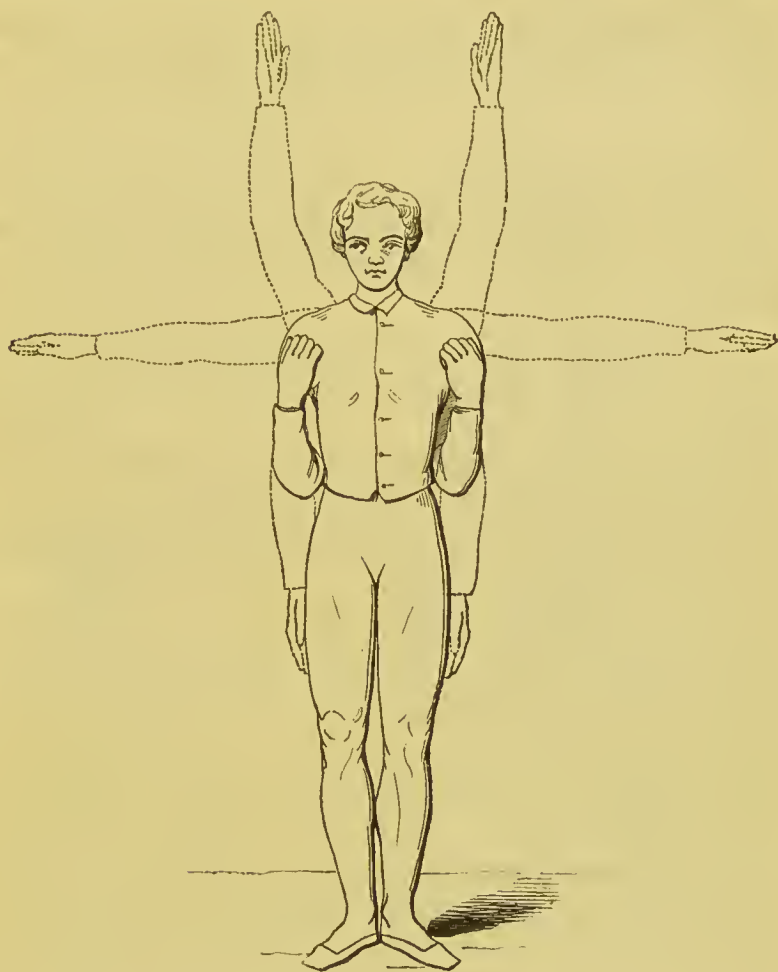
V. *Extension of the arms downwards*, in two motions.

The commencing positions are—1. Arms extended forwards. 2. Arms extended outwards. 3. Arms extended upwards.

First motion. We bend quickly the arms, draw the elbows well back, and put them firmly at our sides, the arms remaining in the position of *flexion of the arms upwards*.

Second motion. The arms are extended downwards, with the hands near the thighs.

VI. *Arms extended upwards, forwards, outwards, and downwards.*



We extend the arms in one of the four levels, and after having bent the arms, and put the elbows at our sides, as in the exercise of flexion of the arms upwards, we rapidly extend both arms in another level. This is done in eight motions.

First, arms bent upwards ; second, arms extended upwards ; third, arms bent upwards ; fourth, arms extended

forwards; fifth, arms bent upwards; sixth, arms extended outwards; seventh, arms bent upwards; eighth, arms extended downwards.

VII. *Extension of the arms alternately in one and the same level.*

We make these movements alternately in one and the same level, either up and down, or forwards and outwards, which is executed from the following commencing positions.

1. Right arm extended upwards. 2. Left arm extended upwards. 3. Right arm extended outwards; left arm forward. 4. Left arm extended outwards; right arm forward.

The movement has two motions. First. Both arms are brought into the position of flexion of the arms upwards.

Second. Each arm is extended in the direction in which the other arm was in the commencing position.

VIII. *Extension of the arms alternately in different levels, in two motions.*

We make these movements alternately in two different levels, namely, in the horizontal and perpendicular; one arm is extended upwards or downwards, the other forwards or outwards.

First motion. The arms as in the position of flexion of the arms upwards.

Second motion. One arm extended horizontally, the other perpendicularly, and after having repeated the first motion, the arms are extended in different levels. During these movements we must keep the body immovable, shoulders well back and down, elbows close to the sides of the trunk, the arms and hands during the extension upwards, forwards, and downwards, at a right angle with the shoulders; during the extension outwards, in a straight line with them.

If we are able to execute these extensions with the arms, we combine them with movements of the trunk.



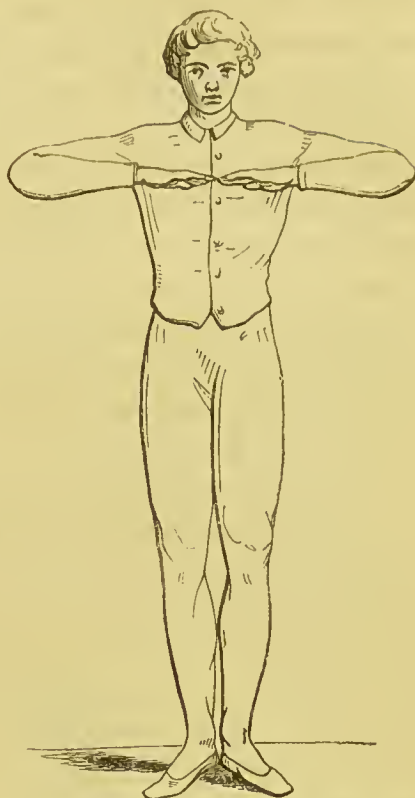
IX. *Striking out the arms*, in two motions.

First. The arms raised sideways, and bent forwards.

Second. Arms extended outwards.

In the first motion the arms are elevated, so that the hands are in the same level with both the elbows and the shoulders, the thumbs slightly touch the chest, the fingers are extended strongly, the palms of the hands directed downwards.

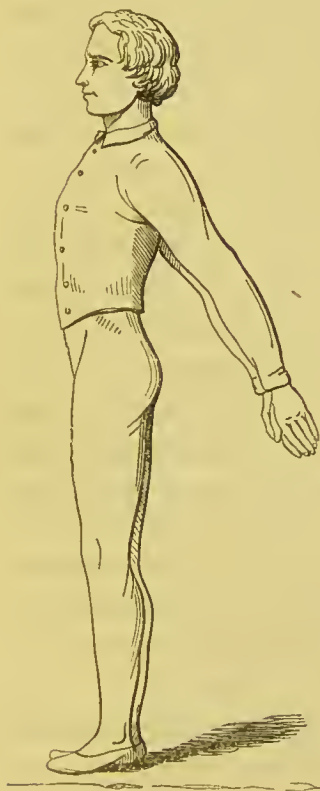
Arms extended backwards.



In the second motion the body remains immovable, while the arms are extended horizontally outwards (as in extension of the arms outwards), with force and quickness, behind the line of the shoulders, and as much as possible backwards.

X. *Arms extended backwards*, in two motions.

The power of keeping back the shoulders and elbows is increased by the preceding movements, as well as by the extension of the arms backwards; although this last movement, being dependent



upon the formation of the joints of the shoulders and arms, cannot be executed with altogether the same force and quickness as the other extending movements of the arms.

First motion. The elbows bent, as in flexion of the arms upwards.

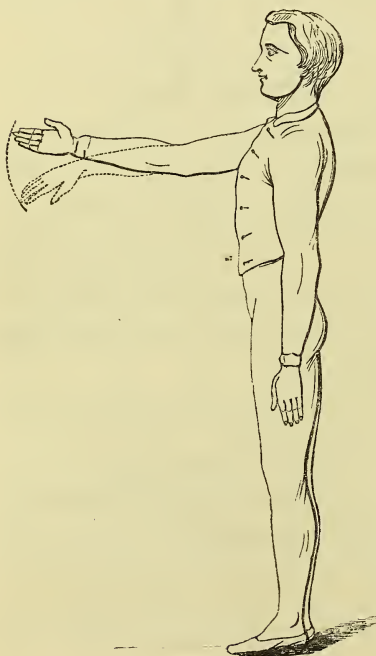
Second motion. While the shoulder-blades are kept firmly backwards, as far as possible, and the palms of the hands turned towards each other, the arms are extended strongly, the thumb being directed forwards, and all the fingers put close together.

XI. *The arms alternately extended upwards, downwards, and backwards, in four motions.*

Commencing positions :

1. Right foot completely forward.
2. Left foot completely forward.

Hands turned inwards and upwards, or outwards and downwards.



3. Feet placed apart and straight.

4. Feet placed apart and in a right angle.

First motion. Both elbows bent, as in a flexion of the arm upwards.

Second motion. Right arm extended upwards, and left arm backwards.

Third motion. As in the first motion.

Fourth motion. Right arm extended backwards, and left arm upwards, etc. etc.

XII. *Hands turned inwards and upwards, or outwards and downwards, in one motion.*

After having extended horizontally outwards or

forwards the arms, we must, without changing the position of the arms, turn the hand in the articulation of the hand and elbow either in and up, or out and downwards; the upper part of the arm is kept quiet in its horizontal position, outwards or forwards, and the palm of the hand is turned in and up, or out and downwards, by a semicircular movement, in the articulation of the elbow and wrist; hereafter the movement is repeated after the words one and two.

XIII. *Hands alternately turned inwards and outwards*, with the arms in two different horizontal directions.

Commencing positions:

1. Right arm extended forwards, left outwards.
2. Left arm extended forwards, right outwards, in one motion.

The hand of the arm which is extended outwards is turned by a quick movement, so that the palm of the hand is turned at the same time in and upwards, as in the position of "hand turned inwards and upwards." The hand of the arm which is extended forwards is turned out and downwards, and its internal side is the same as in "hand turned outwards and downwards."

*Faults* generally committed during the movements of the arms are—1. That the body does not remain quiet, but bends in the direction in which the exercise is done. 2. That the shoulders are not kept sufficiently back and down. 3. That the elbows are not kept sufficiently close to the body in the single motions of the different movements, 4. That the arms, when they are to be extended upwards, do not retain their perpendicular positions along the ears.

#### MOVEMENTS OF THE HEAD.

The commencing positions are all standing and sitting positions.

I. *Flexion of the head forwards*, in two motions.

First. Bend the head forwards; the chin is gently moved down and forwards, till the face forms an angle of forty-five degrees with the trunk, without any change in the position of the body.

Second. Head extended upwards; the head is slowly raised till the commencing position is resumed.

II. *Flexion of the head backwards*, in two motions.

First. Bend the head backwards; the chin is gently moved up and backwards, till an angle of forty-five degrees is formed backwards.

Second. Head extended upwards, as in the preceding movement.

III. *Flexion of the head to the left*, in two motions.

First. Head bent to the left, till the angle of forty-five degrees is formed with the trunk; the face is always directed forwards.

Second. Head extended upwards.

*Faults.*—1. The back is bent either forwards or backwards. 2. One or the other shoulder is raised.

IV. *Flexion of the head to the right*, as in III.

V. *Flexion of the head alternately forwards and backwards.*

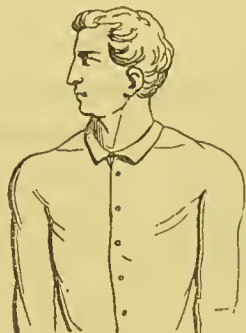


VI. *Flexion of the head alternately to the right and left.*

VII. *Flexion of the head forwards, to the right, backwards, to the left, one after the other ; this is also called, if executed quickly, active rotation or revolving of the head, which is either to the right or left.*

VIII. *Head turned to the right, in two motions.*

First. Turn the head to the right. The patient turns the head, which is placed with its axis in the same vertical line with the body, to the right, till the right eye comes in a straight line with the anterior part of the right articulation of the shoulder.



Second. Turn the head forwards. The head is gently turned till it is in the commencing position.

IX. *Head turned to the left, as in VIII.*

X. *Head alternately turned to the right and left.*

XI. *Head turned to the right, and bent backwards, in four motions.*

First. Turn the head to the right.

Second. Bend the head backwards.

Third. Extend the head upwards.

Fourth. Turn the head forwards.

XII. *Head turned to the right, and bent forwards, in four motions, as in XI.*

XIII. *Head turned to the left, and bent forwards, in four motions, as in XI.*

XIV. *Head turned to the left, and backwards flexed, in four motions, as in XI.*

The following four exercises differ from the preceding four, in the flexion of the head being first executed, and the turning following afterwards.

XV. *Flexion of the head backwards, and then turning to the left, in four motions.*



First. Bend the head backwards.

Second. Turn the head to the left.

Third. Extend the head upwards.

Fourth. Turn the head forwards.

XVI. *Flexion of the head forwards, and turning to the right, in four motions, as in XV.*

XVII. *Flexion of the head backwards, and turning to the left, in four motions, as in XV.*

XVIII. *Flexion of the head forwards, and turning to the left, in four motions, as in XV.*



*Faults.*—1. The trunk does not remain in its vertical position, but moves forwards or backwards, with the head bent. 2. One of the shoulders is raised while the head is bent sideways. 3. The shoulders must not remain in their

positions, but turn in the direction in which the head is turned.

#### MOVEMENTS OF THE EYES.

These movements are done with one eye, or with both at the same time.

Commencing positions:—

1. All vertical positions with the head upright, straight, or turned.

2. All horizontal positions with the head turned or straight.

The different movements of the eyes are indicated by—

*Look*—1. To the right ; 2. Left ; 3. Right and upwards ;

4. Left and downwards ; 5. Straightforward ; 6. Left and upwards ; 7. Right and downwards ; 8. From the right to the left, and *vice versâ*, in a straight line ; 9. In a circle from the left to the right, and *vice versâ*.

*Faults.*—1. The head turns, bends, or is raised to the side where the eyes are turned. 2. When looking up, the front is frowning. 3. When the eyes move from one side to the other, they make a half circle, instead of going in a straight line across.

## MOVEMENTS OF THE LEGS.

The movements of the legs are forwards, backwards, outwards, inwards, upwards, and downwards.

I. *The trunk raised on the toes.*

Commencing positions :—

1. Hips held.
2. (a) Hips held ; (b) right or left foot placed forwards.
3. (a) Arms extended upwards ; (b) right or left foot placed forwards.
4. (a) Hips held ; (b) feet placed close together.
5. (a) Hips held ; (b) feet close together ; (c) right or left foot put forwards.
6. (a) Hips held ; (b) feet placed apart.
7. (a) Arms extended upwards ; (b) feet placed apart.

In every one of these commencing positions there are two motions made.

First. The body is raised on the toes.

Second. The body down.

In the first motion, the body is gently raised upon the toes by extension of the instep. The position of the body remains as in the previous commencing position, the knees extended, the trunk and head, which must be held in a straight line with the legs, are placed forward during the raising, without losing the balance.



The second motion is executed as soon as we replace ourselves in the commencing position.

*Faults* generally committed during this movement are—

1. The body and arms are not maintained in the same position; if extended, they must be in the same direction as in the commencing position. 2. The heels are separated. 3. The knees are bent. 4. The instep is not sufficiently extended so as to raise the body.

## II. *Flexion of the knees.*

Commencing positions:—

1. (a) Hips held; (b) body raised on the toes.
2. (a) Arms extended upwards; (b) body raised on the toes.
3. (a) Hips held; (b) feet placed outwards; (c) body raised on the toes.

In each of these three commencing positions we make the two following motions:

### Flexion of the knees.



First. Knee bent. The knees are bent slowly, so far as to form a right angle; the body is held perpendicularly, and the trunk is immovable, the weight resting forward over the soles of the feet; the heels are raised on the toes, which lean to each other, and the knees placed outwards, so that their internal sides are in the greatest flexion, and perpendicular to the outsides of the feet.

Second. The body is raised upwards, and the knees slowly ex-



tended, without the body losing its perpendicular position.

III. *Hips forward*, in two motions.

Commencing position: (*a*) Hips held, (*b*) feet placed outwards, (*c*) body raised on the toes.

First motion. The hips are placed slowly forwards, in a horizontal direction.

Second motion. The body is raised upwards, and replaced in the previous commencing position.

*Faults* during these two last movements are—1. Extending unequally the legs, trunk, head, and arms. 2. The heels are placed too much down, and the knees too little bent. 3. The chin is too much pushed forward. 4. The seat is pushed too much backward, so that the body bends forward. 5. The arms, when extended upwards, do not remain in this position perpendicularly along the ears.

IV. *Flexion of the knee of the foot, which is placed completely forwards and straight*, in five motions.



First. Hips held.

Second. Right or left foot completely placed forwards.

Third. Right or left knee bent.

Fourth. Body raised on the toes.

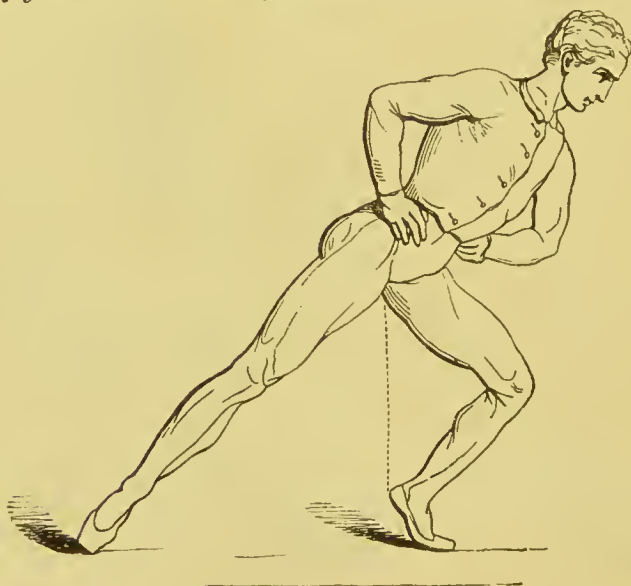
Fifth. Knee extended upwards.

The first two motions are known; in the third the weight of the body is totally and entirely placed on the foremost knee, and pushed forwards on it still further; in the fourth motion the foremost heel is always more raised, and the foremost articulation of the knee more bent. (Vide the following drawing.) The side which is directed to the front retains a straight line, inclined to the ground.

In the fifth motion the foremost knee is extended, and the heel placed down, till the commencing position, consisting of the two first motions, is re-established.

*The faults* are—1. The foremost heel is not sufficiently raised from the ground. 2. The foremost knee does not retain the same direction with the foot. 3. The body shakes, and the seat and leg do not remain in one and the same line.

V. *Flexion of the knee, of the foot which is put completely forwards, in a right angle, in six motions.*



First. Hips held.

Second. Feet placed close together.

Third. Right or left foot placed entirely forwards.

Fourth. Right or left knee flexed.

In the fourth motion, the foremost right or left knee is bent, and at the same time the heel of the foot which is behind remains firm on the ground in an inclined straight line. (The drawing shows the body raised on the toes in this motion.)

Fifth. Body raised on the toes.

Sixth. The foremost knee is extended slowly till the commencing position is resumed.

*Faults.*—1. The posterior leg is bent. 2. The posterior heel is raised in the fourth motion. 3. We do not push ourselves forward so much on the foremost knee as to lose the balance.

VI. *Flexion of the knee of the posterior leg, while the other is placed forwards or straightforward, in five motions.*

First. Hips held.

Second. Left or right foot placed forwards.

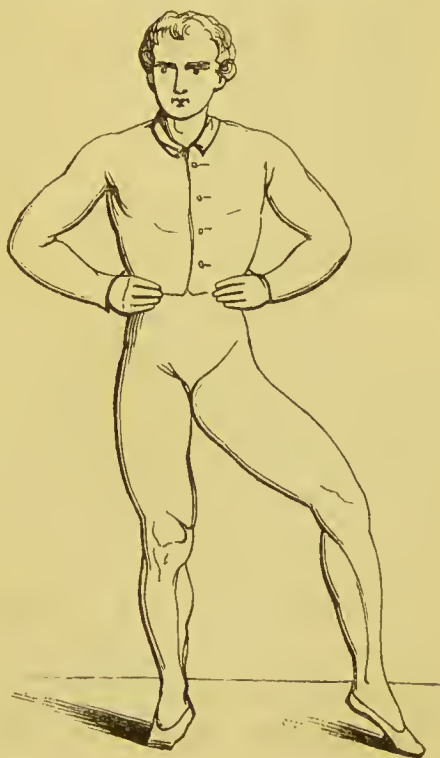
Third. Extended upon the toes.

Fourth. Left or right knee bent.

The weight of the body is entirely placed on the posterior left or right foot, the knee of which is gently bent during the position on the toes, while the body above them is retained perpendicularly.

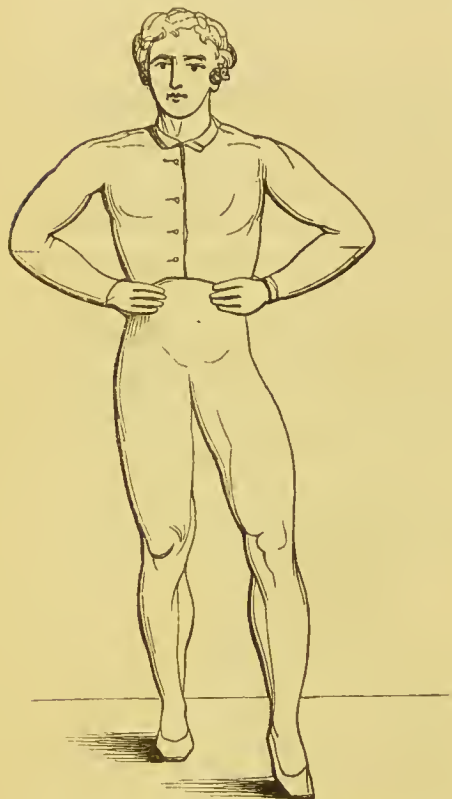
Fifth. The knee extended upwards. The posterior knee is extended slowly, in order to regain the commencing position,

Flexion of the knee in the position  
left foot placed forwards.



and to lay the weight of the body on both legs. The same movement is done in the position, *one foot placed straight-forward.*

Flexion of the knee in the position left foot placed straightforward.



*The faults* during this movement are—1. The posterior knee is not placed entirely outwards. 2. The body does not form a line perpendicular with regard to the ground. 3. The anterior knee is too much extended. 4. The

Flexion of one knee upwards.



head does not remain perpendicular. 5. The position of the toes is not retained.

VII. *Flexion of one knee upwards*, in three motions.

First. Hips held.

Second. Right or left knee bent upwards. The right or left knee is raised straightforward, so high that the thigh forms a right angle with the body, at the same time the knee is bent so that the leg from the knee-joint to the tips of



the toes, which must be extended towards the ground, becomes perpendicular.

Third. The foot placed down. The raised knee is extended, while the foot is placed down, by a short step near the other, which remains quiet, the body not losing its vertical position.

VIII. *Turn the knee (bent upwards) out and in*, in five motions.

First. Hips held.

Second. Right or left knee bent upwards.

Third. Knee placed outwards. The knee is placed slowly outwards, so that the thigh is vertical with the shoulders and hips, which remain quiet in the articulations.

Fourth. Knee placed forwards. The position as in the second motion.

Fifth. Foot placed down.

*The faults during the last two movements are—*

1. The trunk is inclined backwards, and on the side of the leg on which we stand. 2. The knee of the leg on which the weight of the body rests, is bent. 3. The knee which is raised up, is held below the fixed angle. 4. The instep is not extended.

IX. *Extension of the knee (bent upwards) backwards*, in five motions.

First. Hips held.

Second. Right or left knee bent upwards.

Third. Knee extended backwards. The right or left leg is gently placed backwards, while the knee is ex-



tended in the same direction, in such a manner that also the foot is extended at the same time as the leg, as far as possible from the ground, as well as from the leg on which we stand.

In order to collect the strength, we must press strongly the palms of the hands and the internal sides of the thumbs towards the hips.

Fourth. Knee bent upwards. The extended foot is bent, and put in the same position as in the second motion.

Fifth. Foot placed down.

*The faults* are—1. That the knee which is to be placed backwards is bent, in order to place the foot very high from the ground. 2. That the body and chin are pushed forwards, with the intention of a counterbalance to the leg. 3. That the leg on which the weight of the body rests, bends, and the body shakes.

#### MOVEMENTS OF THE TRUNK.

These are turning and flexing movements, which must be performed very gently ; the difference between the two movements being, that during the flexion the shoulders and hips have the same direction ; during the turning the hips remain in the commencing position, and the shoulders are placed in a line transverse to the lower part of the trunk.

I. *Flexion of the trunk backwards*, in two motions.

Commencing positions:

1. Hips held.
2. Arms extended upwards.
3. (a) Arms extended upwards; (b) feet placed closely together; (c) right or left foot placed forwards.
4. (a) Arms extended upwards; (b) feet placed apart.
5. (a) One arm extended upwards, the other on the hip; (b) one foot placed forwards. (Vide figure.)

First motion. The trunk bent backwards.

The knees are kept extended, the body bent gently backwards, the position of the head with respect to the

body remains immovable, and the same as in the commencing position; the hips are pushed a little forwards.

If the arms be extended, they must be kept during the flexion of the trunk continually in the same direction to the ears.

Flexion of the trunk backwards.

If one foot be pushed forwards, the weight of the body falls during the flexion principally on the posterior leg, the knee of which must not be kept stiff during this movement; by this means, the loins and upper foremost part of this leg are strongly extended.

If both feet be placed apart, we are better able to make the flexion backwards, not only because we have a greater basis, but because we are then also able to bend both knees, and thereby an angle is formed forwards, which corresponds to the angle which our body makes when bending the lumbar vertebræ backwards.



Second motion. Trunk extended upwards.

We must gently raise the body without changing the position of the head, with respect to the trunk, till we resume the commencing position, while the knees, if they had been previously extended, remain immovable; and if they were bent, they must be raised upright, at the same time with the trunk.

*Faults.*—1. In the first and second commencing posi-

tions the knees are bent. 2. The head is thrown either backwards or forwards. 3. The arms do not remain in their perpendicular position near the ears, and they do not follow the movements of the trunk.

II. *Flexion of the trunk forwards*, in two motions.

Commencing positions :

1. Hips held.
2. Arms extended upwards.
3. (a) Arms extended upwards ;  
(b) feet placed close together ;  
(c) right or left foot placed forwards.

4. (a) Arms extended upwards ;  
(b) feet placed apart.

First motion.  
Trunk bent forwards.

We bend the trunk slowly forwards, the knees

remain extended, the head with the face in the direction of the front, the eyes straightforward.

If the arms are extended, they remain in their position near the ears, and must not be removed from them during the flexion.

Second motion. Trunk extended upwards.

We raise ourselves slowly upright, until we are in the commencing position.

These two movements can be made also with the feet put close together, or with a distance between them.





The greatest flexion is when the upper part of the body is almost in a right angle to the lower part.

### III. *Flexion of the trunk down and forwards.*

The same commencing position as in the second movement.

Can be made also with the head bent down, if the movement be continued till the ends of the fingers touch the ground, and the face reaches the knees.

*Faults.*—1. The knees are bent. 2. In the third commencing position the foremost knee is not extended sufficiently, or the posterior heel does not remain on the ground. 3. The head changes its direction. 4. The seat is pushed too much backwards. 5. The arms come before the head.

### IV. *Flexion of the trunk sideways, in two motions.*

Commencing positions :

1. Feet put close together.

2. (a) Right or left arm extended upwards ; (b) feet put together.

3. (a) Right or left arm extended upwards ; (b) feet put close together ; (c) right or left foot put forwards.

First motion. Bend the trunk to the right or left.

The trunk is bent slowly to the right or left side ; both feet remain immovable and firm on the ground ; the knees straight ; the shoulders immovable, on the same level with the hips ; the hand (at the side on which the body bends), on the outside of the thigh, is put down till it touches the outside of the knee, by which we feel whether we change the above-named direction or not.



Second motion. The trunk extended upwards.

If the movement be performed with one arm extended upwards, this must be the arm which is opposite the bending side, and it must remain in its position.

V. *Flexion of the trunk on both sides, with alternately extended arms*, in five motions.

Commencing positions as Nos. 2 and 3 in IV.

First motion. Bend the trunk to the right or left.

Second. Arms extended upwards.

Third. Change the arms.

Fourth. Bend the trunk to the left or right.

Fifth. Trunk extended upwards.

*Faults*.—1. The knee, on the side where the body is bent, is not kept extended. 2. The foot of the opposite side is raised. 3. The body is bent either forwards or backwards, so that the flexion is not in the same level with the hips. 4. The head bends too much on one side. 5. The hand of the side which is bent does not follow the outside of the thigh. 6. The arm, if extended, is removed from the head.

VI. *Turn the trunk on the right or left side*, in two motions.

Commencing positions :

1. Feet put close together.

2. (a) Hips held ; (b) feet put close together ; (c) right or left foot forwards.

3. (a) Hips firmly held ; (b) feet put close together ; (c) feet put apart.

First motion. The trunk turned to the right or left. The upper part of the trunk is gently moved to the right or left, while the hips remain immovable in their direction ; the legs straight and close, the feet quite close to one another ; the head itself does not turn, but moves at the same time with the trunk, and remains with the elbows in the same position, with respect to the upper part of the trunk, as in the commencing position.

Second motion. The trunk turned forwards. The

Turning of the trunk to the right side.



shoulders and upper part of the body are slowly turned forwards, till they are in the same direction and level as the hips.

*Faults.*—1. The knees are bent. 2. The feet are not kept firmly on the ground. 3. The head and body are not kept immovable.

VII. *Flexion of the trunk backwards, while it is turned to the left or right.*



Commencing positions :

1. (a) Hips held; (b) trunk turned to the left or right.

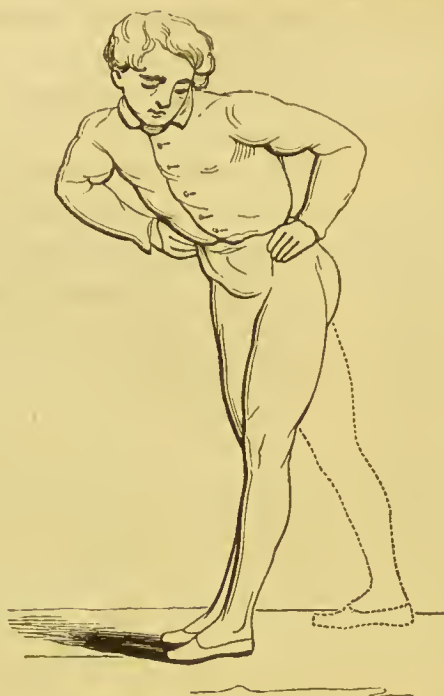
2. (a) Arms extended upwards; (b) trunk turned to the left or right.

VIII. *Flexion of the trunk forwards, while this is turned to the left or right.*

This movement is also performed with the feet put close together.

*The faults* are the same as in the other movements with the trunk.

Flexion of the trunk forwards and turning to the left.



The other movements of the trunk are all analogous, in their change and combination of flexion and turning, to the movements of the head above mentioned.

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ORDER IN WHICH THE PRECEDING MOVEMENTS  
ARE TO BE LEARNED BY HEALTHY PERSONS.

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TABLE I.

1. Fundamental position.
2. Hold the hips.
3. Feet placed alternately close together and in a right angle.
4. Feet placed forwards and backwards.
5. Feet placed sideways.
6. The body raised on the toes, with the hips held.

7. Arms bent upwards and extended downwards.
8. Flexion of the trunk backwards and forwards, with the hips held.
9. The body raised on the toes, with the hips held, and one foot placed forwards.
10. Extension of the arms upwards and downwards.

## TABLE II.

1. One foot placed straightforward and backwards, with the hips held, and feet together.
2. Feet alternately placed forwards.
3. Raising of the body on the toes, with the hips held, and feet close together.
4. Extension of the arms upwards and downwards.
5. Flexion of the trunk backwards and forwards, with the hips held.
6. Raising of the body on the toes, with the arms extended upwards, and one foot placed forwards.
7. Flexion of the head forwards and backwards.
8. The same to the right and left.
9. Raising of the body on the toes, with the hips held, and feet placed apart.
10. Extension of the arms outwards and downwards.

## TABLE III.

1. Raising of the body on the toes, with the hips held, and one foot placed straightforward.
2. Extension of the arms forwards and downwards.
3. Flexion of the trunk backwards and forwards, with the hips held.
4. Flexion of both knees, with the hips held.
5. Flexion of the head.
6. Turning of the trunk, with the hips held, and feet placed close together.
7. Extension of one arm upwards, the other downwards (repeated alternately).



8. Repetition of No. 1.
9. Extension of the arms upwards and downwards.

## TABLE IV.

1. Raising of the body on the toes, with arms extended upwards, and one foot straightforward.
2. Turning of the head.
3. Extension of the arms upwards and downwards.
4. Flexion of the trunk backwards and forwards, with the arms extended upwards.
5. Flexion of both knees, with the hips held.
6. Turning of the trunk, with the hips held, and feet placed close together.
7. One foot placed completely forwards, from the fundamental position, and then with the feet close together.
8. Extension of the arms upwards and downwards.
9. Flexion of the trunk to the right or left, with feet placed close together and one arm extended upwards.
10. Feet alternately placed completely forwards, from the fundamental position, as well as from that of the feet close together.
11. Flexion of the trunk forwards, with arms extended upwards.

## TABLE V.

1. Flexion of both knees, with the hips held.
2. Extension of both arms from one level to another (upwards, outwards, forwards, and downwards).
3. Flexion of the trunk backwards and forwards, with arms extended upwards, and one foot placed straightforward.
4. Flexion of both knees, with arms extended upwards.
5. Turning of the head.
6. Repetition of No. 2.
7. Flexion of the foremost knee, with the hips held, and the foot completely put straightforward, also alternately with the other knee.

8. Flexion of the trunk to the right and left, with feet placed close together, and one arm extended upwards.

9. Extension of one arm forwards, the other outwards, and change of the arms in the same level.

10. Feet alternately placed completely forwards, the other outwards, from the fundamental position, as well as from that with feet closed.

#### TABLE VI.

1. Flexion of both knees.

2. Extension of the arms backwards.

3. Flexion and turning of the head combined.

4. Flexion of the trunk backwards and forwards, with arms extended upwards, one foot placed straightforward, and the head down.

5. Flexion of the posterior knee, with the hips held, and one foot placed forwards.

6. Extension of the arms upwards and downwards, with feet placed close together, and flexion of the trunk sideways.

7. Flexion of the anterior knee, with the hips held, and one foot placed straight completely forwards.

8. Extension of the arms alternately in different levels, one arm upwards, the other outwards or forwards.

9. Turning of the trunk, with flexion forwards or backwards, and the hips held.

10. Flexion of one knee upwards, with the hips held.

11. Extension of the arms from one level to another, upwards, outwards, forwards and downwards.

#### TABLE VII.

1. Flexion of the foremost knee, with the hips held, and one foot placed completely forwards.

2. Extension of the arms upwards and downwards, with turning of the trunk to the right and left.

3. Turning of the head, with flexion.

4. Extension of one arm forwards, the other outwards,

and alternately placed in the same level, with one foot placed completely forwards.

5. Flexion of the trunk backwards and forwards, with the feet placed apart, and the arms extended upwards.

6. Flexion of one knee upwards, and extension of the same leg backwards, with the hips held.

7. Flexion of the trunk sideways and one arm extended upwards, first with the feet close together, and then one foot placed forwards.

8. Repetition of No. 1.

9. Turning of the hand inwards and outwards, with the arms extended forwards or outwards.

10. Flexion of one knee upwards, which is then brought outwards.

11. Flexion of the arms upwards.

#### TABLE VIII.

1. Flexion of the posterior leg, while one foot is placed forwards, with the hips held.

2. Turning of the hand inwards and outwards, with one arm extended forwards, the other outwards.

3. Flexion of the head in all four directions.

4. Flexion of the trunk backwards and forwards, with one arm extended upwards, first with closed feet, then one foot placed forwards.

5. Extension of one arm upwards, and the other downwards, executed alternately.

6. Flexion of the trunk forwards.

7. Turning of the trunk to the right or left, with flexion of the body forwards or backwards, and arms extended upwards.

8. Flexion of both knees, with the hips held, and feet placed apart.

9. Turning of the hands outwards and inwards, with one arm extended forwards, the other outwards.

10. Turning of the trunk on one side, with the hips held (first closed feet, then one foot placed forwards).

## TABLE IX.

1. Flexion of both knees, with the feet separated, the hips held and brought forwards.

2. Turning of the hands inwards and outwards, with arms extended forwards or outwards.

3. Flexion of the head, with the hips held.

4. Flexion of the trunk forwards and backwards.

5. Flexion of one knee upwards, and extension of the leg backwards.

6. Flexion of the trunk to one side.

7. Extension of the arms upwards, outwards, forwards, and backwards.

8. Turning of the trunk on one side, with flexion of the body to the right or left.

9. Turning of the hand inwards and outwards, with change of the position of the feet, and different direction of the trunk.

10. Flexion of one knee upwards, and extension of the leg forwards.

## TABLE X.

1. Flexion of the foremost knee, with the hips held, and one foot placed forwards.

2. Extension of the arms upwards and downwards, with turning of the trunk on one side, and flexion of the trunk backwards.

3. Flexion of the trunk forwards, first with feet closed, then one foot placed forwards.

4. Flexion of the knees upwards, and extension of the leg backwards.

5. Flexion of the head backwards, with flexion of the trunk forwards, and the hips held.

6. Flexion of the trunk on one side, first with closed feet, then one foot placed forwards.

7. Raising of the body on the toes, with the hips held, and the elbows drawn back as much as possible.

8. Flexion of both knees, while the body is raised on the toes, and the arms extended upwards.

## COMMENCING POSITIONS.

The commencing position is very important in every movement, because the effect depends in a great measure upon this position; therefore we thought it advisable to give in the following a few instances of commencing positions, which, in conjunction with the preceding movements, will, more or less, enable the physician to choose those which are suitable in every individual case. As the commencing positions may be indefinitely varied according to the position of the limbs of the body, relatively to each other, and to the surface which sustains the body, all the commencing positions are ranged under the following principal forms:—

- |              |   |                      |
|--------------|---|----------------------|
| 1. Standing  | } | commencing position. |
| 2. Sitting   |   |                      |
| 3. Kneeling  |   |                      |
| 4. Lying     |   |                      |
| 5. Depending |   |                      |

## STANDING COMMENCING POSITIONS.

*The standing commencing positions*, in which the points of support are in the soles, differ (*a*) according to the position of the body with respect to the supporting plane, and (*b*) according to the relative position of the limbs to each other.

We quote only the following standing commencing positions:—

1. Upright standing (with the feet in a right angle, touching each other with the heels, and the arms depending) in the fundamental position. See illustration at page 125.

2. Standing upright in the fundamental position, with the hips held. See illustration at page 129.

3. Standing upright, with feet close together, and arms hanging down. See illustration at page 126.

4. Standing on the toes. See illustration at page 141.



5. Standing with the arms horizontally extended outwards. See illustration at page 132.

6. Standing with the arms extended horizontally forwards. See illustration at page 131.

7. Standing with the arms extended upwards (extended standing). See illustration at page 130.

8. Standing with the trunk turned. See illustration at page 153.

9. Standing with the trunk flexed sideways. See illustration at page 151.



10. Inclined standing.



11. Stride-standing.



12. Reclined standing.



14. Standing with one foot on a step.



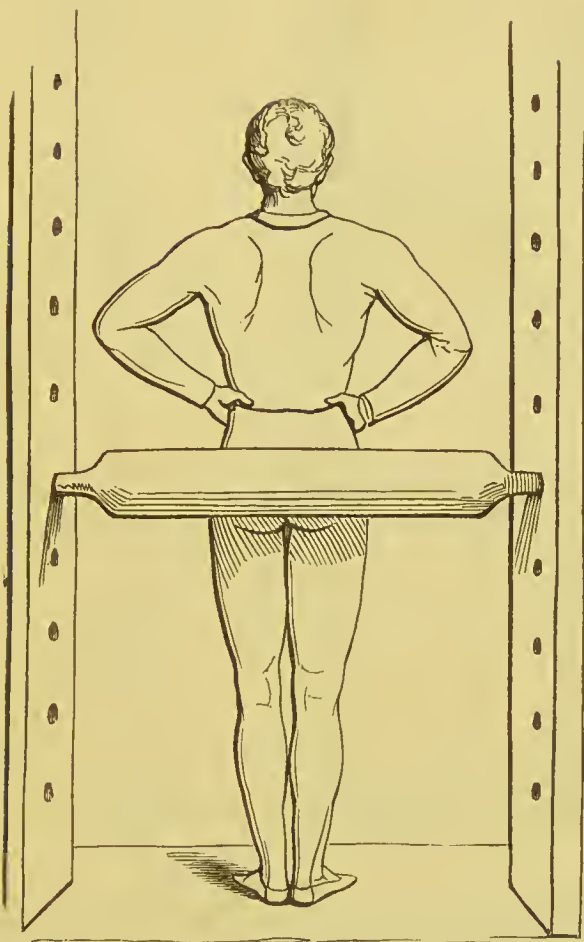
13. Cross standing.



15. Curved (arch) standing.

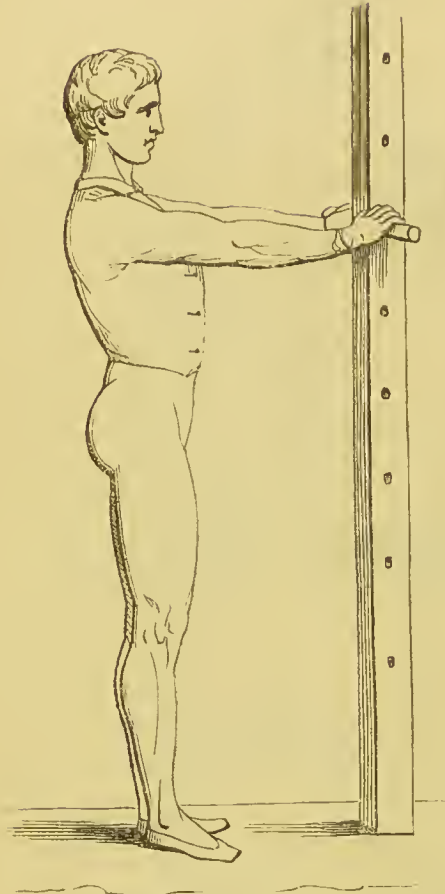


16. Standing in a stooping position.



17. Standing in a leaning position. All standing positions, in which we lean with a part or the whole of the posterior surface of the body or limbs on a fixed object, belong to this class.

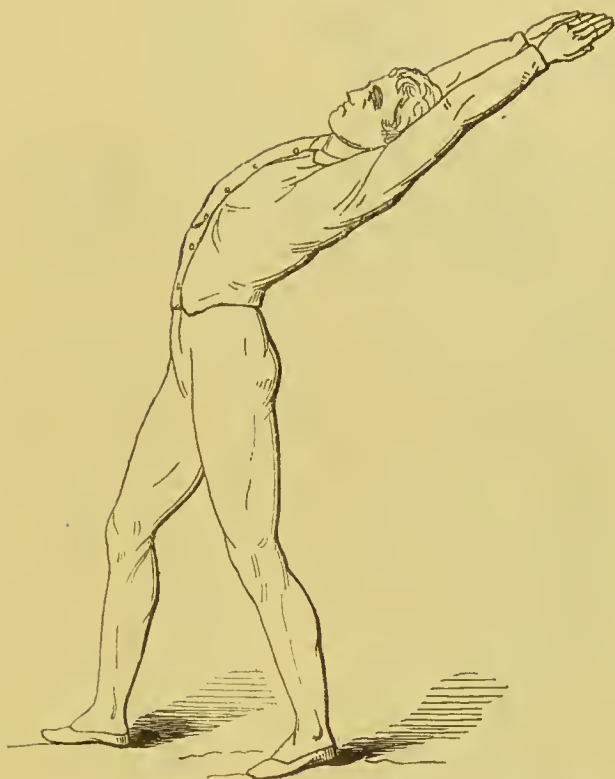




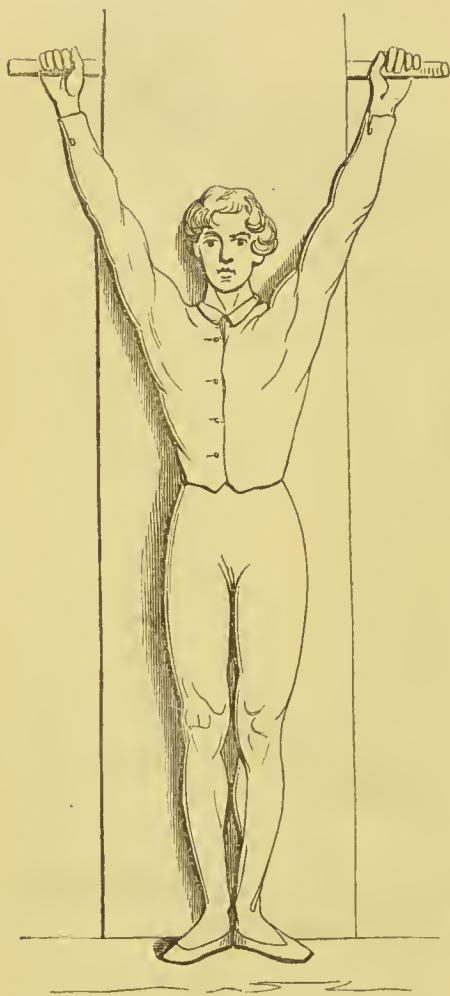
18. Opposite standing. All standing positions, in which we lean or keep ourselves with a part or the whole of the limbs on the anterior surface of our body on a fixed object, are called opposite standing positions.



19. Walking-standing, with one arm extended upwards (half-extended walking-standing).



20. Curved (arch) walking-standing, with arms extended upwards (extended-curved walking-standing).



21. Sustained standing, with  
the arms extended and fixed.



22. Half-standing, with  
the arms extended upwards.



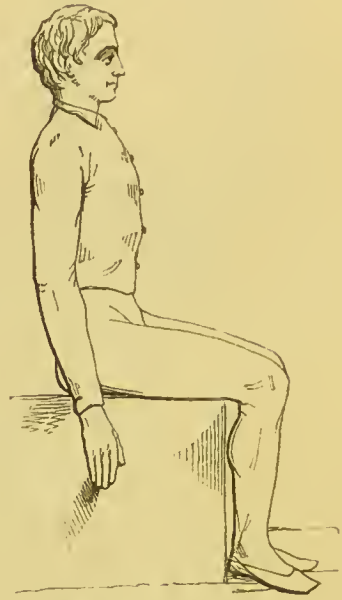
23. Standing with the legs astride, and the arms extended upwards.

## THE SITTING COMMENCING POSITIONS

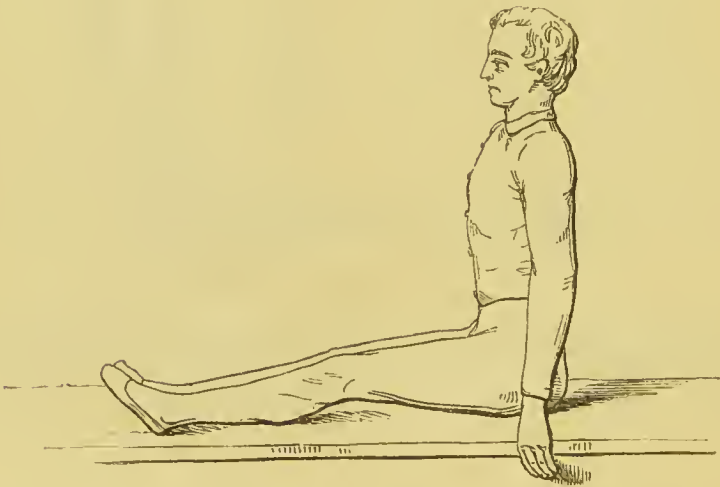
Have their points of support in the seat and also in the thighs.



1. Short sitting.



2. Full sitting.



3. Sitting with the legs extended in the same plane with the seat, called long sitting.





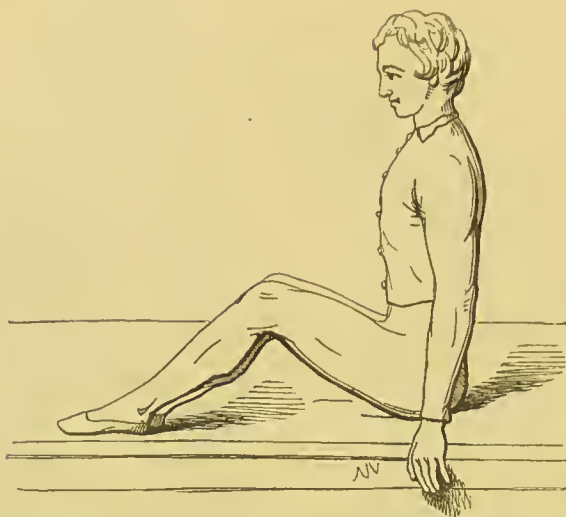
4. Sitting with the trunk flexed sideways.



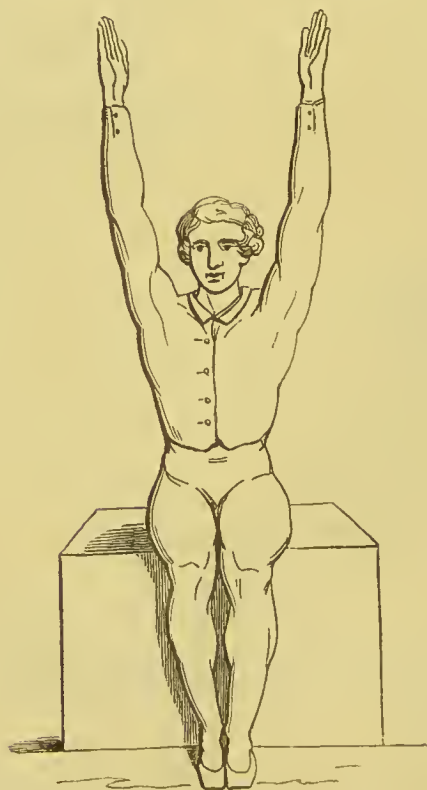
5. Stride (ride) sitting.



6. Short sitting, with the hips held and the trunk reclined.



7. Sitting with the legs forming an angle.



8. Sitting with the arms extended.



9. Sitting with the trunk turned sideways.

#### THE KNEELING COMMENCING POSITIONS

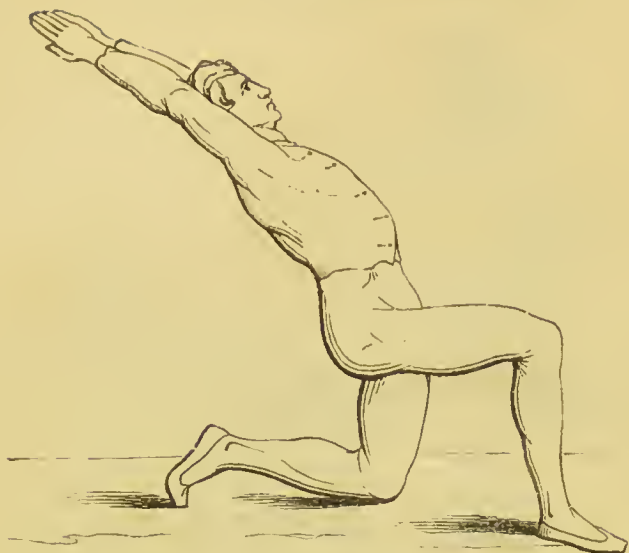
Have natural points of support in the knees, and besides them, the points of the feet afford also points of support, except we kneel on an elevated plane, in which case the anterior surface of both legs helps to support the body.



1. Walking-kneeling.



2. Half-kneeling.

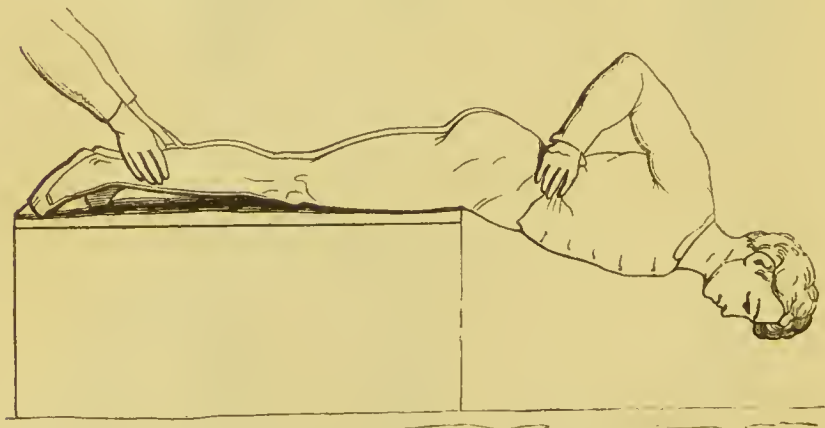


3. Half-kneeling, with the trunk flexed backwards, and arms extended upwards.

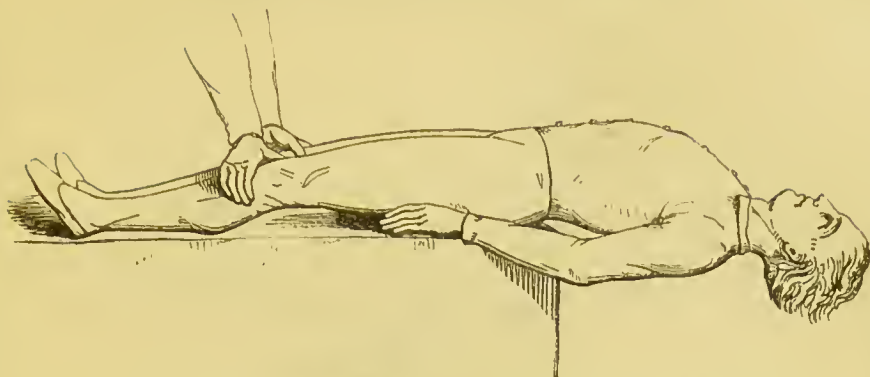
#### THE LYING COMMENCING POSITIONS

Have the points of support either on the back or the anterior surface of the body, or on one of its sides. We call half-lying positions all those in which either the upper part of the body to the hips, or the inferior part from the hips, is the supporting part.

Instances of lying commencing positions are—



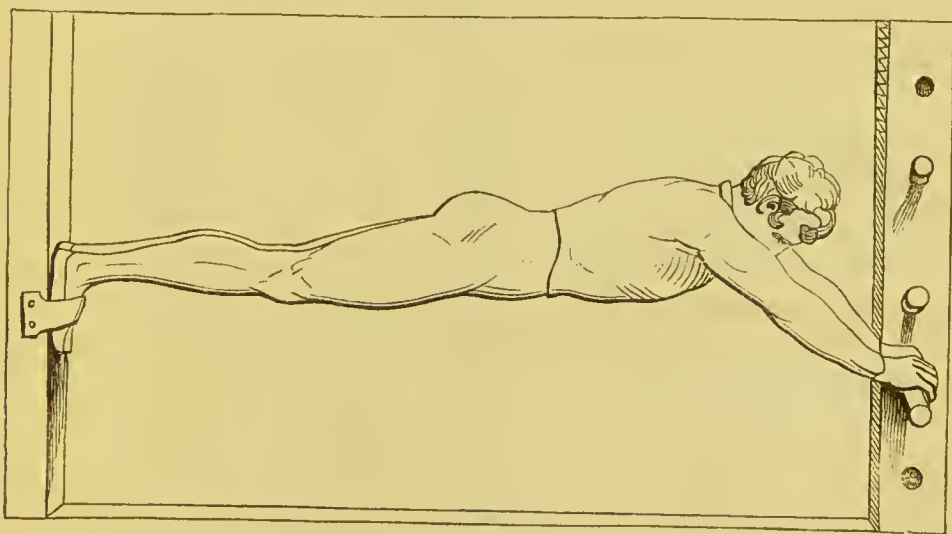
1. Half-lying on the anterior surface of the lower limbs.



2. Half-lying on the posterior surface of the lower limbs.



3. Supported lying, with the thighs drawn upwards, and flexion of the knees.



4. Horizontal extension of the whole body, while the feet and hands are fixed ; commencing position.



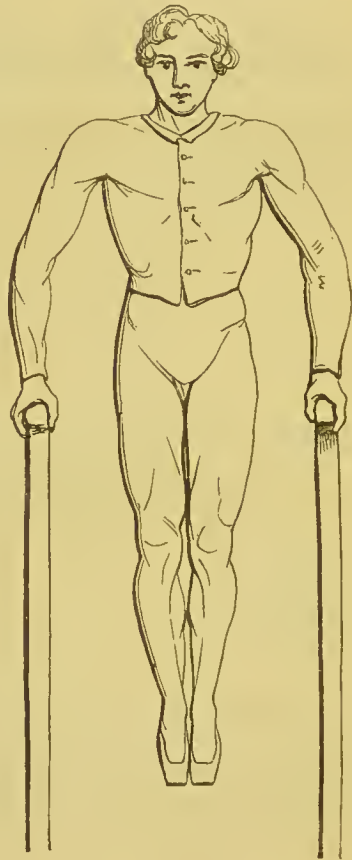


5. Horizontal extension of the whole body, while the feet and hands are fixed; final position.

#### DEPENDING COMMENCING POSITIONS.

The hands, arms, or the knees are the holding points; ropes, beams, and balks are the external supporting points.

Instances of depending positions are—



1. Prop-depending.



2. Depending with one arm.

## TREATMENT OF SINGLE DISEASES.

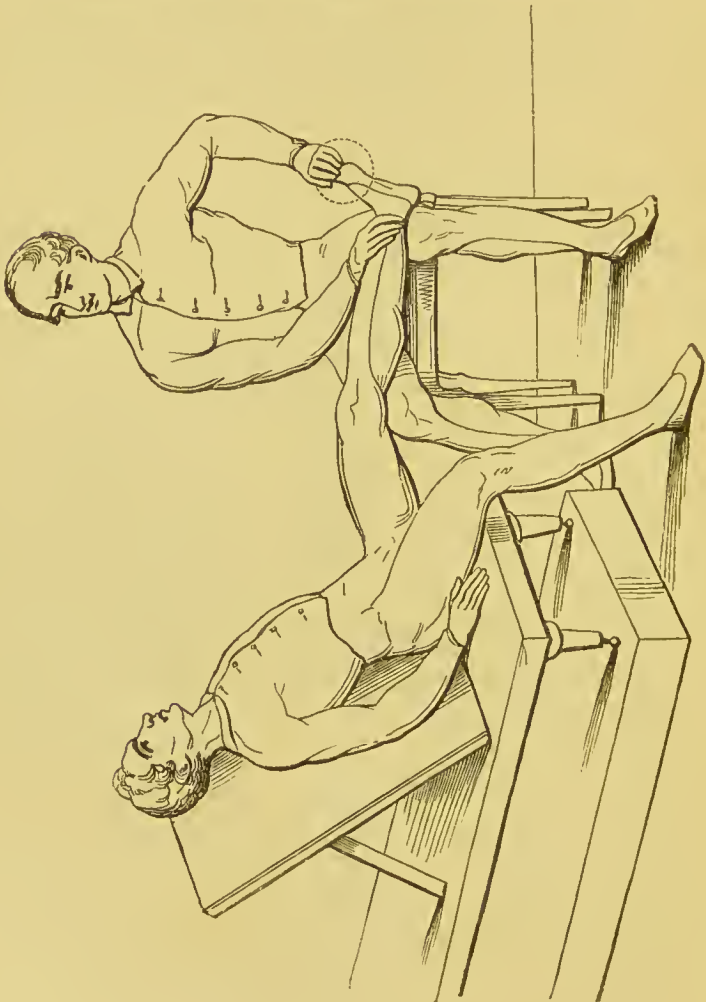
CONGESTIONS OF THE HEAD, HEADACHES, GIDDINESS,  
HUMMING IN THE EARS, ETC.

The following three classes of movements form the essential part of the treatment.

We subjoin only a few instances for practical use.

I. *Derivative movements on the legs and feet*, as for in-

Commencing position of the passive rotation of the foot.



stance, active and passive rotation of the feet, active-passive extension and flexion of the legs and feet, etc.

Every movement, whether active or passive, by increasing the activity of the blood-vessels in the lower limbs, is at the same time derivative in congestions of the head and chest.

*Passive rotation of the feet, with active-passive extension and flexion of the feet.*

The patient is in a sitting reclined position, his leg, which is extended, resting with the lower part of the calves on both knees of the operator, who places, when acting on the left leg, his right hand an inch before and on the anterior aspect of the articulation of the foot, in order to fix it, without strong pressure, while the palm of the left hand is placed on the point of the foot, the heel of which is not rested like the calf, but is entirely free; this is the commencing position. The operator then moves his left hand, which presses a little on the point of the foot, in a circle from right to left,

Commencing position of active-passive extension of the foot.



from three to six times, and then the same from left to right, more or less quickly according to the prescription. This rotatory movement is repeated two or three times. After every rotation in opposite directions, *the active-passive extension and flexion of the foot* is executed; in the extension, the operator resists, (while the patient extends his foot), with the palm of his hand pressing against the upper part of the sole; if the patient tries to flex his extended foot, the operator, after having changed the position of his hands, retains its point a little by pulling his hand with a slight pressure along the upper side of the metatarsal part of the foot.

Commencing position of active-passive flexion of the foot.



The three movements above mentioned are performed in the following order:—

(a) Passive rotation of the foot from right to left, and *vice versâ*.

(b) Active-passive extension of the extended foot.

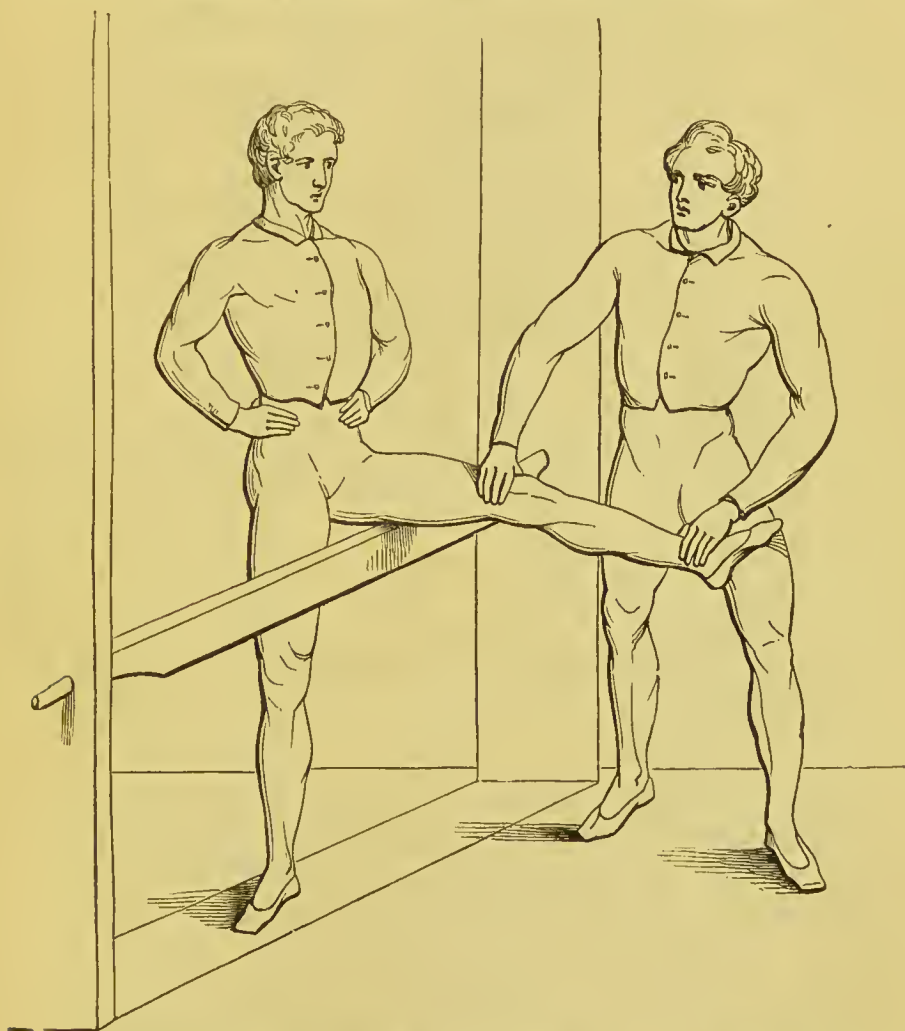


(c) Active-passive flexion of the flexed foot.

(b) and (c) are alternately made from three to six times.

*The passive-active flexion of the leg* is also a derivative movement, in which the patient and operator are placed as in the following illustration; the operator presses down the leg, while the patient slightly resists; in the active-passive extension of the leg, the patient tries to stretch the flexed leg, and the operator resists.

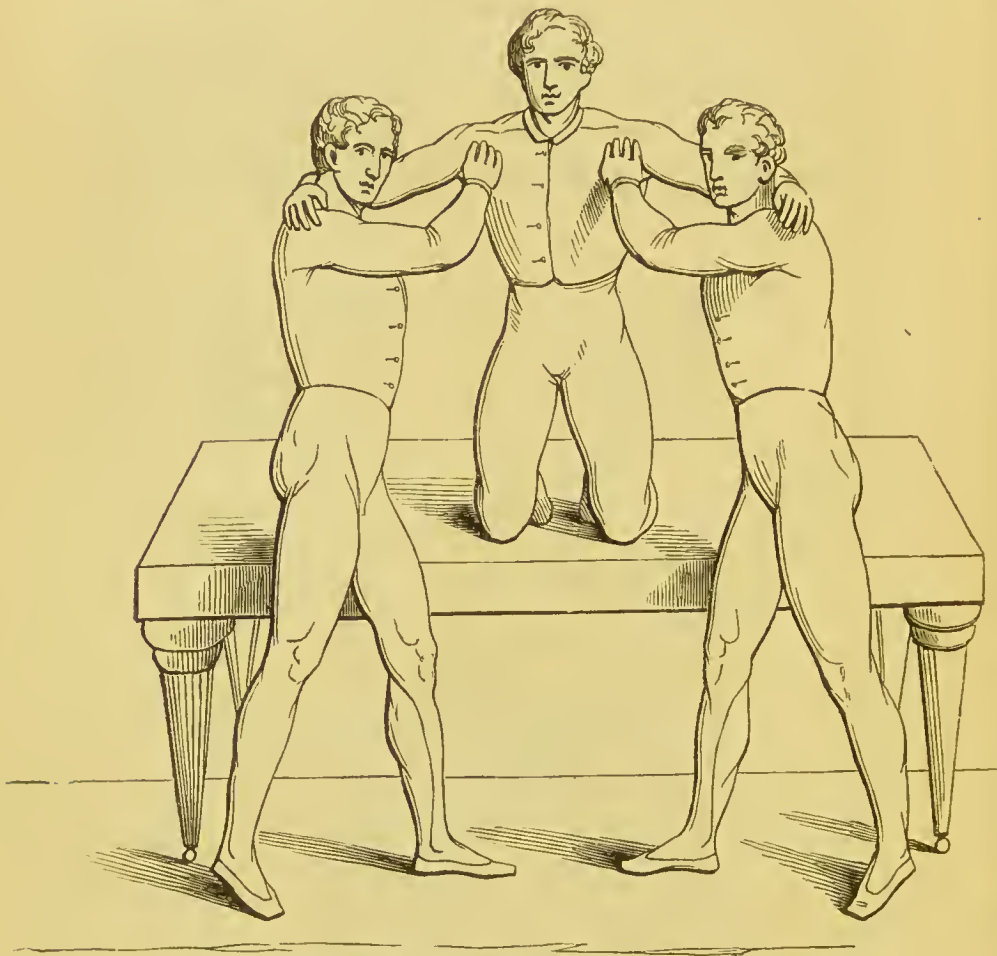
Commencing position of passive-active flexion of the leg.



II. *Movements determining a greater flow of blood to the*

*abdomen*, which may be either passive or active manipulations of different kinds; as, for instance, turnings or flexions of the trunk, and principally the following:—

(a) *Passive-active inclination of the trunk forwards in the stride-kneeling position.*



The patient kneels on an elevated level, putting his arms on the shoulders of two assistants standing on each side of him, each assistant puts one hand on the anterior side of the patient's shoulder, while the other hand is placed on the lower part of the patient's spine. (Our artist did not indicate the position of the other hand of the assistants, because he feared the figure of the patient would not be distinctly shown.) If this commencing position is

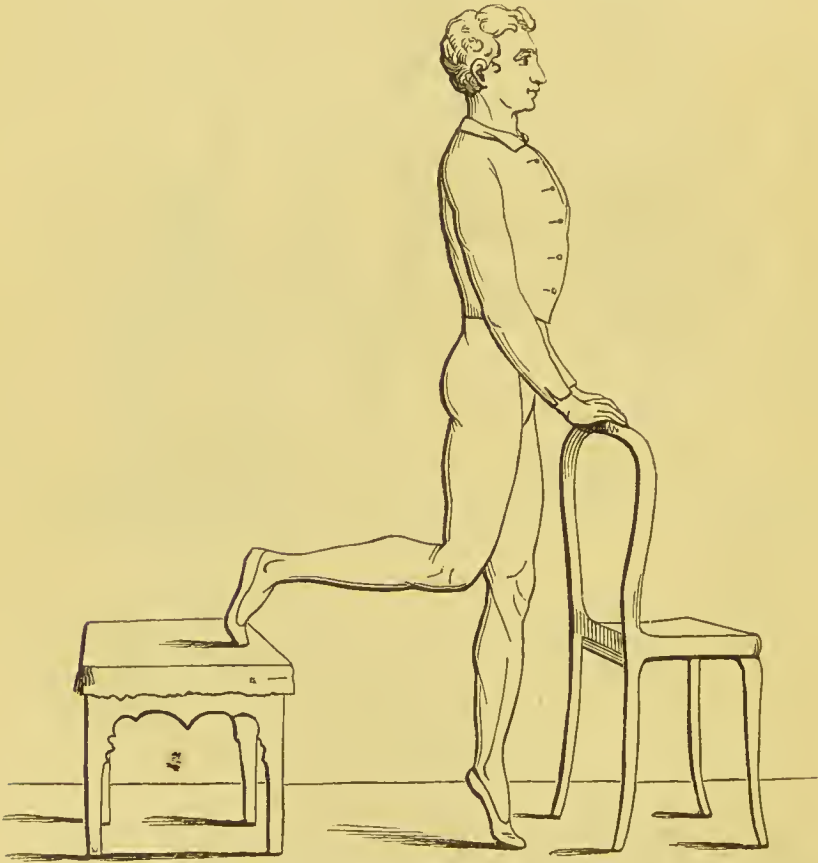
taken, the assistants bring the patient slowly forward to an angle of forty-five degrees, while the patient makes a slight resistance, as if he would continually try to remain in the commencing position.

(b) *Passive turning of the trunk from one side to the other, and vice versâ, in the high half-lying position.*



The patient rests as far as the hips on the anterior surface of his lower extremities, on an elevated level; his legs are firmly held by an assistant, who puts his hands on the back part of the patient's legs, while the points of his feet are kept outwards; the hands of the patient are placed on the hips; the operator stands before the patient's head, on whose shoulders he puts his hands in order to produce the turning movement of the trunk, which acts principally on the sinuses within the cranium, and retards the circulation of the blood towards the jugular veins.

(c) *Active flexion of one leg in a half-standing position, while the other foot rests backwards on an elevated level.*



1. Commencing position of active flexion of one leg in a half-standing position.



2. Final position of active flexion of one leg in a half-standing position.

The patient stands on one foot, with the toe turned outwards, while he places the toe of the other foot upon a level elevated as high as his knee, and at a distance behind him equal to the length of the leg, from the knee downwards; his hands rest gently upon the back of a chair, placed before him (so that he may not lose his balance during the flexion of the knee and when standing on tiptoe), while the body lets its weight rest on the point of the foot on the elevated level. (The point of the foot on the level may also rest with the upper part of the toes on the level.) The movement is repeated from two to four times on the same leg, and then alternately with the other.



(d) *Active-passive turning of the trunk in the high-sitting position.*



The patient and operator are placed in the commencing position, as seen in the figure; the patient presses backwards his extended arm, by turning the trunk in the hip, while the head and body remain with respect to each other in the same position; the operator resists only during the patient's movement backwards, but not when he returns to the commencing position; the movement is done two or three times, and then the arm changed.

(e) *The active-passive flexion of the trunk in the high-sitting*

*position* has the same commencing position; the trunk is not turned, but flexed to the side of the extended arm.

III. *Movements which increase the action of the absorbent vessels in the head, to which belong—(a) The passive rotation of the head. (b) The rotation of the trunk in the high-sitting position, either active or passive. (c) Frictions from before backwards, along the longitudinal sinus, and from the mastoid processes of both sides to the top of the head; this movement not only acts on the covering of the cranium, but also along the spinal marrow, where it produces a feeling of cold. (d) Circular percussions with the palm of the hand on the patient's head.*

*Case.* A patient suffering, as may be inferred from the symptoms, probably from tubercles in one of the hemispheres of the brain, complained for many years of violent and periodical pains in his head. He was treated first by derivative movements, and then by circular percussions, performed slightly with the hand on the upper part of the head, which movement very soon cured the cephalalgia, the excessive heat, the painful and continual throbbing, and the fits of convulsions and giddiness. (From Professor Branting's Official Report in Stockholm, 1842.)

Periodic headaches in women and girls were most successfully treated by Neumann, and the fit itself often immediately arrested, which is so rarely effected by medicines. He employed—

1st. Longitudinal frictions in the direction of the sinus longitudinalis and transversus.

2nd. Turnings of the trunk, with fixed legs in a half-lying position, in order to increase the course of the venous blood in the jugular veins.

3rd. Passive-active flexions of the trunk, to derivate the arterial blood to the dorsal muscles. In obstinate and very violent cases also, derivative movements to the feet were used.

*Headaches or giddiness during or after a single movement.* If a patient should complain of headache or giddiness during single movements, or in consequence of the treatment by

movements, the operator puts one hand, without the slightest pressure, on the top of his head, and makes with the other gentle frictions on the arteries of the neck and throat, then on the veins, and finally on both from above downwards; the final movement is always a passive rotation of the head, under a gentle pressure on the top of the head, then slightly pressing frictions in one direction upon the eyebrows, from the middle of the forehead towards the temples, terminating with shaking pressures on the temporal arteries.

*Cases.* An elderly gentleman complained, through being exposed to the draught of an open window during the night, of the most violent noises and humming in the ears, so that he was often unable to distinguish even the loudest noise from excessive giddiness, and he was sometimes even deprived of consciousness. Several medicines, bleeding, cupping, etc., brought no relief; therefore his physicians recommended the treatment by movements, which, after a week, produced the most wonderful change, so that the patient was soon able to resume his usual occupation and was at length perfectly cured.

There is also mention made of a physician who for some years suffered from a symptomatic humming, and also of a young lady, both of whom were cured.

Another patient, after a fever at Bahia, suffered from violent humming in the ears, deafness, burning sensation of the scalp, scintillations before the eyes, frequent sensation of suffocation; for two years he had been obliged to give up his ordinary occupation, and by movements he recovered his health; only the hearing, though considerably ameliorated, was not quite recovered. (Branting's Official Report, 1850. Communicated by Georgii, in the *Homœopathic Times*.)

From ninety-one patients who suffered from congestions of the head and giddiness, thirty-three were cured and thirty-six much improved by movements. The rest discontinued the treatment or were discharged unimproved.

(Tabular view of patients treated at the Royal Central Institution at Stockholm, from July 1, 1848, to July 1, 1849. Georgii.)

INFLAMMATIONS OF THE EYES, PRINCIPALLY CHRONIC CONJUNCTIVITIS, have been cured by absorbent and derivative movements. Many cases of specks on the cornea, of short duration, and where the opacity of the cornea was but of small extent, were successfully cured by movements by Neumann, who communicates the following cases and their treatment.

*Case 1.* A girl, twenty-two years old, was, according to her own statement, from her infancy so blind, in consequence of variolous ophthalmia of the right eye, that she could not discern broad daylight from the darkest night; there were three spots on the cornea of the size of a pea, which touched each other, and covered the whole cornea in such a manner that only very small transparent spots remained towards the edges of the cornea. One of the opaque spots, situated in the central part of the cornea, was not only distinctly prominent, but also so unequally and differently coloured, that it was plainly a real scar of the cornea; the other opacities had the common white colour of mother-of-pearl, and therefore the cornea appeared very similar to the so-called opal glass. It was impossible, even with the microscope, to examine the state of the iris and pupil. As the conjunctiva of the sclerotica was also metamorphosed in different places by dilated vessels, and no other inflammatory symptoms were to be seen, the excision of some single pieces of it was tried, in order to diminish the nutrition of the scar-texture of the cornea, but this had not the desired effect; the repeated scraping off of the opaque spots of the cornea was equally unavailing; a more or less inflammatory reaction followed, but without changing the condition of the cornea. The medicines employed internally as well as externally produced no good effect, and the patient was discharged; after an interval of six weeks she returned, and requested to be operated



upon, with the hope the operation would succeed. Instead of which, the treatment by movements was employed, and continued for fourteen weeks, the result of which was that the power of vision was so far restored, that the patient knew the number of the fingers held before her, the colour and form of a pocket watch, etc. At the same time the cornea became so changed, that already many entirely transparent places were to be seen, while others were covered as with a cloud; the black colour of the pupil and the quick movement of the iris (notwithstanding it appeared on the inner edge of the cornea attached to the leucoma) could be very distinctly seen with the eye; the scar of the leucoma was considerably more level, and still more diminished, and there was no doubt that the scar-texture itself disappeared.

We do not know whether the further effects of the treatment entirely restored the eye, as the result is not yet published by Dr. Neumann, who wished to show that equally successful results, which had never been previously possible by any treatment whatever, can be produced by movements. He also mentions that there is a possibility of an absorption of the cataract of the lens and its capsule, because—although in these organs there are no lymphatic vessels visible to the eye, even if assisted by the best microscopes—a greater movement, and consequently a quicker change of substance, can be produced in the so-called Schleiden cells of the lens.

The treatment of this case consisted of the following movements:—

- 1st. Pressure on the supra-orbital region.
- 2nd. Passive rotation of the head.
- 3rd. Frictions in the direction of the longitudinal superior sinus, and transverse, and the beginning of the internal jugular vein.
- 4th. Flexion of the trunk, with resistance.
- 5th. Active rotation of the lower extremities.
- 6th. Percussion on the soles of the feet, with a cylindrical piece of wood.



1. The pressure is to be made on the inner end of the arcus supra-ciliaris, the back of the nose, the inner angle of the eye, the lachrymal sac and duct, on the arcus supra-ciliaris, the superior edge of the orbital bones, the upper eyelid, the closed eyelid fissure, the inferior eyelid, and the inferior edge of the orbital bones above, on, and under the external angle of the eye, the os zygmoideum and the arcus sigmoideus. The pressures are more convergent to the parotid gland, and terminate underneath on the lymphatic glands of the throat. These pressures were repeated by the patient, with convenient intervals, twenty or thirty times a day, and continued during the whole treatment, because the absorption is increased principally by them.

2. The passive rotation of the head is performed as follows.

The patient, in the sitting posture, permits the operator (in whose hand he passively rests his head) to turn it circularly several times to the right, and then to the left, for which purpose the operator puts one hand on the head, and the other on the shoulder of the patient, while he at the same time fixes the shoulders. This movement is repeated at intervals of from eight to ten times daily, by which the absorption in the veins of the eye is strongly stimulated, which becomes evident, as the muscles of the head and neck of the patient are not at all active, and consequently the quantity of arterial blood not increased; while during the rotatory movement all the external and internal organs of the head, and principally the sinus of the dura mater of the brain and the vena ophthalmica cerebialis, are in a vibration, and at the same time pressed, which, according to the physiologists Müller, Bock, Valentin, increases the absorption.

The fifth and sixth movements were only used because the patient complained of cold feet, and because the innervation in the nerves of the feet is stronger, and the circulation of the arterial blood in the feet is rendered quicker by these movements, which acted also directly as derivatives, from the upper parts of the body, and consequently also from the eye.

The second, third, fourth, fifth, and sixth movements were often changed during the fourteen weeks, according to the indications.

We heard lately from Dr. Neumann, that in this case prolapsus of the iris with adhesion was present, and that the vision is so far restored, that the girl is enabled to see even very small objects with the same eye with which she before could scarcely distinguish daylight.

*Case 2.* A child, three years old, became blind, according to the mother's statement, some weeks after its birth, in consequence of a severe ophthalmia. At the commencement of the treatment it saw only the brightest daylight, which was evident from this fact, that the eyes were directed towards it; there was no inflammation, but a change of both corneæ, which in the middle were like opal glass, and on the edges there was a small stripe, of a somewhat bluish colour. The discoloured part was a little prominent, and appeared as if a drop of opal glass were diffused over the middle of the cornea, of which it covered about seven-eighths, and consequently formed concentrically with the edge a prominent ring. Nearly in the centre of the cornea of the left eye was a spot, of the size of a pin's head, which was exactly like an air-vesicle in the opal glass. The effect of the treatment during six weeks was, that the bluish stripe on the edges of both corneæ became four or five times larger, the really leucomatous centre was much diminished, and it is now more blue instead of being of the former mother-of-pearl white colour. The convexity of both corneæ is more considerable, and the power of vision is so far improved that an object, half an inch wide and long, held at a tolerable distance from the eyes, may be known. The treatment consisted principally of pressures, performed forty or fifty times daily by the very careful mother, and of some of the above-mentioned movements, particularly the passive rotations, which could be but very imperfectly employed in the case of the little patient.

## CHRONIC INFLAMMATION OF THE EYELIDS.

*Case.* A young man suffered from chronic inflammation of the eyelids for a series of years, and had been treated by different physicians. Neumann treated him in the beginning with the ordinary internal and external remedies, as the eyelids were ulcerous, thickened, and without cilia, by which he was so far improved that the ulcers of the eyelids were better, and the cilia again began to grow ; the thickening only still remained. Two or three weeks after the medicines had been omitted, the previous morbid process returned. As this young man had previously passed a so-called gymnastic cure, in which only active movements had been employed, and as he had felt a considerable increase of his disease, it was with great difficulty, and after repeated attempts, that he was persuaded to make use of the movements prescribed by Neumann. These, however, not only cured his eyelids and their thickened state, but also prevented a return of the disease. This cure may serve as an instance of the difference between the effects of common gymnastics and those of the treatment by movements.

CHRONIC HEMORRHAGE OF THE NOSE, accompanied by congestions in the face, and produced by weakness of the vascular system.

Besides the above-mentioned *derivative movements*, a *vibrating movement* is employed on the upper part of the root of the nose, which is held with the thumb and forefinger by the operator, while the head of the patient, who is standing or sitting, remains passive. *The elevation of the stiff and extended arms* (as in the exercise with the arms extended upwards) during some minutes is also very good. Negrier advises to raise the arm of the bleeding side above the head, and to compress the bleeding nostril with the forefinger of the other hand.

*Bleeding can be increased*, and even produced, by sneezing, frictions, kneading, pressing, tickling, scratching.

## SLEEPLESSNESS.

Although often in conjunction with other diseases, as the result of a debauched life, neglect of bodily exercise, or the use of laudanum, this symptom has often been cured in a few days. Besides the general treatment, depending on the causes of this disorder, and the constitution of the patient, the specific movement was *a forward and backward passive balancing of the trunk*, while the lower extremities remained horizontally fixed on an elevated plane.

LETHARGY, as a symptom of congestions in the head, is treated like congestions in general; if this symptom be more intense, the entirely passive turning over of the body is necessary, awakening passes on the forehead, and frictions of the limbs.

## CHRONIC INFLAMMATIONS OF THE LARYNX AND WIND-PIPE, IRREGULAR ACTIVITY OF THE VOCAL CHORDS.

Besides the general treatment, a tolerably strong vibration with moderate pressure is employed on both sides of the larynx and windpipe. If there be great irritation of the internal mucous membrane of these organs, the pressure directed on the filaments of the sympathetic nerve must last longer on both sides of the throat, in order to retard during some movements the course of the venous blood in the mucous membranes of the diseased organs.

*Submaxillary vibration* is a lateral vibration of the larynx in the upright position, which is performed while the patient is in a standing or sitting position, without being supported either as to head or neck; the operator holds the larynx with the thumb and on one side, and the three first fingers of the same hand on the other side, and performs with slight pressure of the fingers a vibratory movement, which begins in the upper part of this organ, and terminates immediately above the collar-bones.

*Double lateral oblique friction of the throat.*—We



generally use lateral longitudinal frictions, with both hands at the same time, on both sides of the patient's throat; the operator stands before the patient, puts the three first fingers of both his hands behind the angle of the lower jaw, and makes a friction down, in an oblique direction, to the lowest part of the windpipe, pressing more or less with his fingers during this movement, which is repeated from six to twelve times, and only done from above downwards, but never in the opposite direction.

*Point-vibration on the windpipe.*—The operator places the three extended large fingers of his right hand in such a manner on the patient's throat, that they form nearly a right angle with the surface of that part; the end of the middle finger is placed on the lowest part of the windpipe, immediately above the upper edge of the sternum, the fore and ring finger on its sides, directed along the course of the pneumo-gastric nerves; now the operator makes a vibratory movement while the middle finger presses very gently on the windpipe; this manipulation lasts from ten to thirty seconds, and is repeated two or three times.

*Double frictions from the throat down the shoulders and arms.*—After the previous movement the patient is sometimes stroked with the inside of both hands, from the middle of the throat outwards, above the shoulders, and down on the arms, which manipulation is also repeated sometimes, but only from above downwards.

*Longitudinal friction of the larynx, with three separated fingers.*—This manipulation is performed with the three first fingers of one hand; it begins at the highest point of the larynx, and is continued down to the lowest external part of the windpipe; the three fingers are separated; the middle finger placed on the anterior, the fore and ring finger on the lateral parts of this organ, and under a slight pressure drawn gently downwards.

*Loud speaking, reading, singing, and declamation* must be mentioned as movements producing a greater develop-



ment of all the organs of the voice, and of those parts which contribute to it.

These different movements can be varied and regulated with respect to the order in which they follow each other, and with respect to their repetition and intensity, which entirely depend upon the causes and state of the disease.

*Effects of movements on the voice.*—Experience has recently shown the great effect of movements on persons with a weak low voice, but without any affection of the chest, because, besides the increased strength of the voice, one or more notes were gained as well in the descending as in the ascending scale. It is, therefore, possible to develop the vocal organs, without directly exercising the voice by singing, which acts more on the vocal chords, the larynx, and the velum palati, and is therefore not sufficient of itself for the entire development of the voice, which depends upon additional organs, as, for instance, the constituent parts of the thorax, the lungs, the abdominal muscles, etc.

*Cases.* A gentleman, in consequence of two apoplectic fits, lost his previously sonorous voice, which he recovered with increased force by this treatment by movements.

A young officer, suffering from disease of the liver for twelve years, complained, besides these symptoms, of a profuse expectoration and difficulty in breathing. He observed three weeks after the commencement of the movements that he had gained, without any practice in singing, three higher notes to his previous scale. (Professor Branting's Official Report.)

#### RELAXATION OF THE UVULA,

If caused by increased irritation of the vessels, is cured by frictions on the palate, which are best performed with an instrument in the form of an ivory handle of a dissecting scalpel.

*Case.* A young lady suffered for five years from a constant cough, sensation of cold along the spine, alternating

with the feeling of burning heat in the chest ; spasms of the head or of the heart ; some of the dorsal vertebræ were tender to the touch ; walking produced cough, and palpitation of the heart, constant scintillations before the eyes, giddiness, humming in the ears, lancinating pains in the larynx, and asthmatic breathing, so that she was considered to be in the first stage of laryngeal phthisis, accompanied with spinal irritation. This apparently very complicated disease of such long standing, was caused by the uvula and velum palati hanging down on the root of the tongue, and thus producing a constant irritation to cough. After the first week of the treatment by movements, the cough and soreness of the vertebræ ceased, which unexpected result was principally produced by a single movement, *the submaxillary vibration* (described in diseases of the windpipe *in a stooping standing position*). (Professor Branting's Official Report.)

The above-mentioned case is very instructive, not only as exhibiting a successful cure produced by a specific movement, but as showing to all prejudiced professional men how a mechanically acting and apparently abnormal derangement of the uvula may produce such serious consequences ; a consideration which may induce them to try the effect of movements as curatives, as their action seems to be merely mechanical, although their dynamical and chemical effect becomes very soon apparent.

#### SPASMODIC CONTRACTIONS AND PAINS OF THE PHARYNX.

The specific movement is a hard pressure on the upper and posterior parts of the pharynx, which is brought a little forward by the pressing fingers of one hand ; this movement acts on the sensitive filaments of the nerves of this organ and of the pneumo-gastric nerve, and by a reflex action on its motory filaments.

#### SPASMODIC CONTRACTIONS OF THE ŒSOPHAGUS

Are treated by parallel frictions in a straight line, on both

sides of the pharynx and œsophagus, which movement is executed, like the longitudinal friction, on both sides of the trachea, with this difference ; that the fingers employed are directed rather behind the windpipe on the œsophagus.

*Lateral vibrations* of this organ are also employed.

*Case.* A patient, who for some years was obliged to nourish himself by means of liquids, was cured perfectly by parallel frictions along both sides of the œsophagus. (Professor Branting's Official Report.)

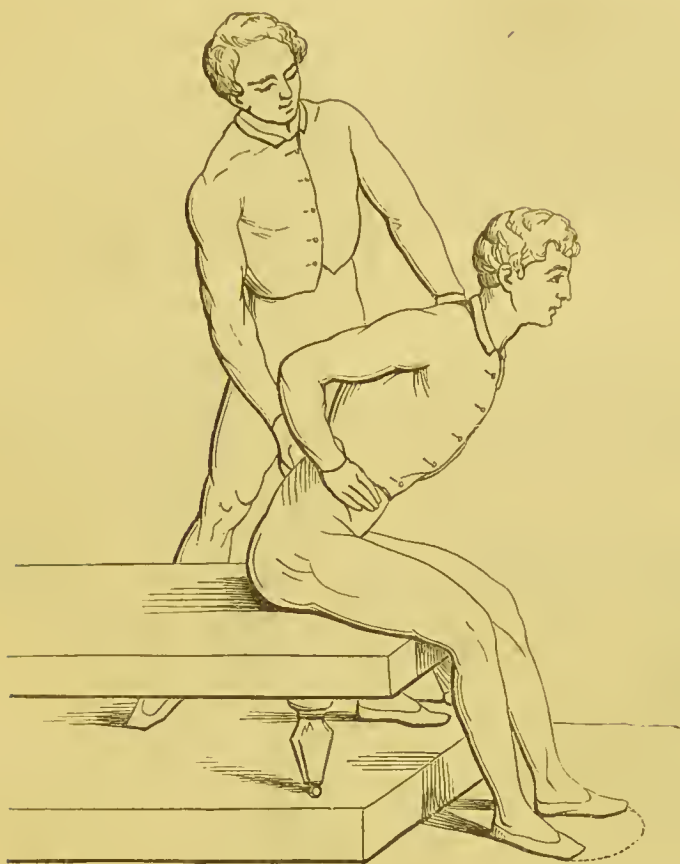
#### NARROW AND CONTRACTED CHEST.

If there is no particular disease combined with this kind of chest, besides the symptoms necessarily produced, as, for instance, impossibility to breathe deeply, a transversal convexity of the back from one armpit to the other, the shoulders kept high and forwards, etc., then the movements will very soon effect a considerable change ; we may mention amongst those specifically acting on the development of the thorax—

1. *The arm movements in general.*

2. *The striking out the arms*, which is to be repeated several times every day, particularly if the muscles which draw back the shoulders, as the rhomboidei, the horizontal fibres of the cucullaris, etc., are relaxed.

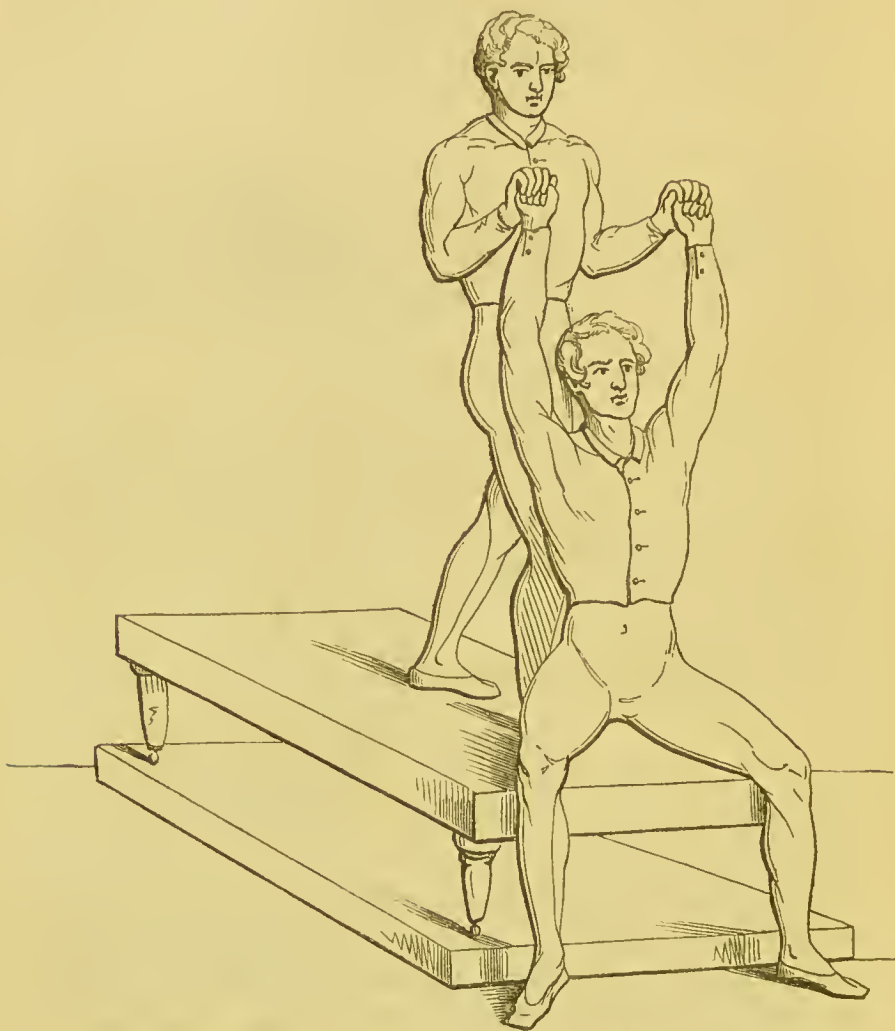
3. *Active-passive raising of the trunk, bent forwards in the sitting position, with knees divided and the hips firmly held.* The patient sits, and keeps his legs bent in the knees, about one distance from one another, the points of the feet are turned outwards, the hips held with both hands, the shoulders drawn back and down as much as possible.



In this position the patient gently bends forwards in the articulation of the hips, without bending the spine or changing the position of the head and shoulders with respect to the trunk, and looks continually forwards; as soon as the patient has attained the greatest possible inclination, the operator, standing on his left, places the palm of his right hand on the sacrum, and continually and firmly presses upon it more or less strongly, while the patient endeavours to raise himself upright, and to return into his commencing position.

After the necessary interval, this movement is repeated from two to four times, according to the condition of the patient.

4. *Passive-active pressing outwards of both arms extended upwards.*



The patient sits, extends his arms, and leans on the leg of the operator, who stands behind him on the seat ; while the operator tries to bring outwards the arms, the patient continually resists, and endeavours to keep together the hands.

5. *Active-passive pulling down of the extended arms in the reclined sitting position, with pressure on the back.*

The patient, in a sitting position, has both his arms extended upwards, the operator, standing on the seat behind him, takes hold of his hands ; then the patient is



directed to bend his arms, by pulling them down towards his side, while the operator tries to make some resistance to the arms of the patient, to whose back he applies, during the movement, a slight pressure, with the lower part of his thigh placed against the spine.

6. *Active-passive extension of the trunk backwards, and passive-active flexion of the trunk forwards, in the high sitting position, with hips held.*



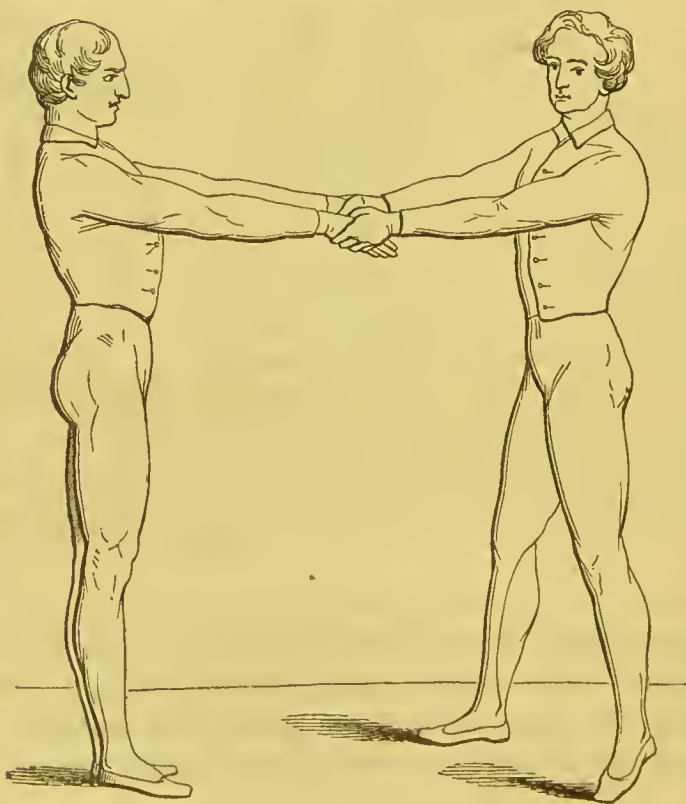
The patient is in a high sitting position, with his nates projecting to the edge of the operating-table, his hands clasping his hips; his legs are fixed by an assistant; the trunk must be upright; the operator stands behind him,

places his right fore-arm on his back, in such a manner that the palm of the hand rests on the occiput of the patient.

In this commencing position the patient is directed to extend his trunk backwards till it is on the same level with the prolonged horizontal line of the operating-table, while the operator makes the necessary resistance with the fore-arm and the hand itself, in order to oblige the patient to act more with the extensors of the back and neck. Afterwards in this position, the operator gently pushes the patient, to bring him again into the commencing position, while the patient resists the operator during this whole movement, as if he would wish to remain in the lying position. After a short interval, this movement is repeated from two to three times.

The following movement of the arms is one of the most important for the development of the chest.

7. *Active-passive horizontal movement of the arms backwards from the position arms extended forwards.*



The commencing position is as follows :

The patient stands in the position of the second motion, of the *arms extended forwards* ; the operator, standing before him, places the palms of his hands on the outside of the hands of the patient, who is directed to bring both his arms, which are kept extended, backwards, while the operator makes a slight resistance.

If the patient is already in the position with the arms extended outwards, then the movement becomes passive-active, and the operator brings the arms forwards, while the patient endeavours to resist. The movement is repeated from two to four times.

It principally strengthens the muscles of the shoulder-blades, by keeping backwards these bones, whilst at the same time it acts indirectly on the muscles of the thorax, and increases the capacity of the chest.

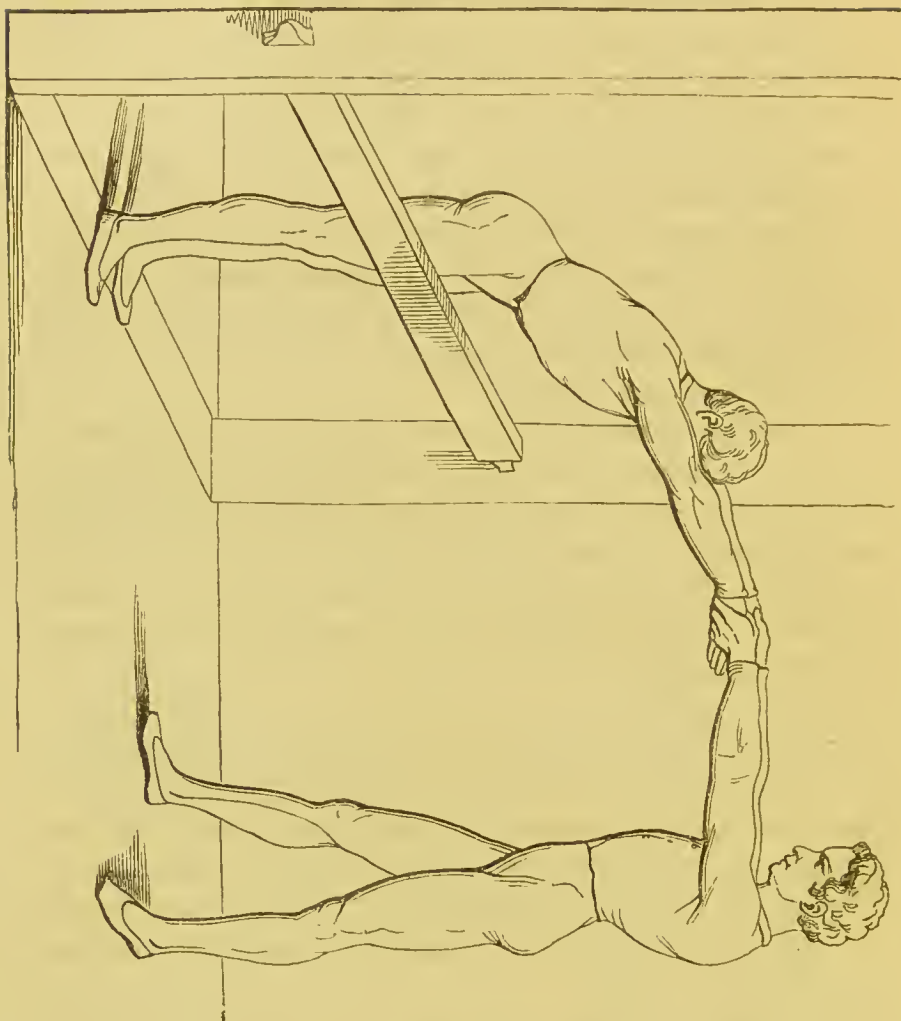
8. *Passive-active flexion of the trunk, with the arms extended obliquely upwards and forwards, in the opposite standing position.*

In the figure we see the commencing position of the movement ; the operator presses slightly on both firmly extended arms of the patient, who resists principally by the muscles of the spine and back, while his points of support are in the soles and in the anterior parts of the thighs. If the trunk is sufficiently bent, the movement can become active-passive before the commencing position is resumed.

The above-mentioned movements, we think, are sufficient for giving an idea of the kind of movements indicated in this abnormal condition of the chest, which is often only a symptom of other diseases of the organs of the chest or spine, etc. Every intelligent physician will be thus able to prescribe and himself invent movements suitable to the special condition of the patient.

The following is an instance of the speedy effects of movements on the development of the chest. In order to show how the capacity of the thorax, and consequently of

Passive-active flexion of the trunk, with the arms extended obliquely upwards and forwards, in the opposite standing position.



the lungs, is very often changed in a very short time, and in a most remarkable way, we select a case treated in 1843, in the Central Institution at Stockholm.

*Case.* A young man, twenty-three years of age, complained of an insupportable weight and extreme lassitude on the chest; his constitution was very delicate, the chest narrow and compressed, the loins wide and prominent. It appeared at first that the treatment by movements would not be successful, or at least only after some years. The

thorax was measured, and as the feeling of oppression indicated derivative movements from the lungs and the heart, such were employed as increased the activity of the external muscles of the chest. After the first three days the oppression disappeared, the periphery of the thorax was an inch, and after the first week, two inches larger. This astonishing effect was principally due to the increased activity of the intercostal muscles, which had been almost paralysed ; it seems by the increased activity of these muscles, the ribs, which were in a downward direction, are considerably raised, and the more upright position of the ribs may be the cause of such a sudden change and increase of the periphery of the thorax ; an effect which seems incredible, except to those who have the opportunity of making such observations themselves.

We had lately an opportunity of observing in different cases the good effects of the movements mentioned under Nos. 3, 5, 7, to which we particularly call the attention of the profession.

## ASTHMA.

As long as the asthmatic sufferings are not too violent, they can in the first stage be prevented from becoming worse, by a suitable mode of living, judicious exercise, neither partial nor too violent, and most of all by the right use of movements.

In more advanced stages, asthma becomes a disease, curable only by the most careful treatment, and while a treatment by means of medicines is in many cases unavailing, the treatment by movements is, according to our present experience, very successful.

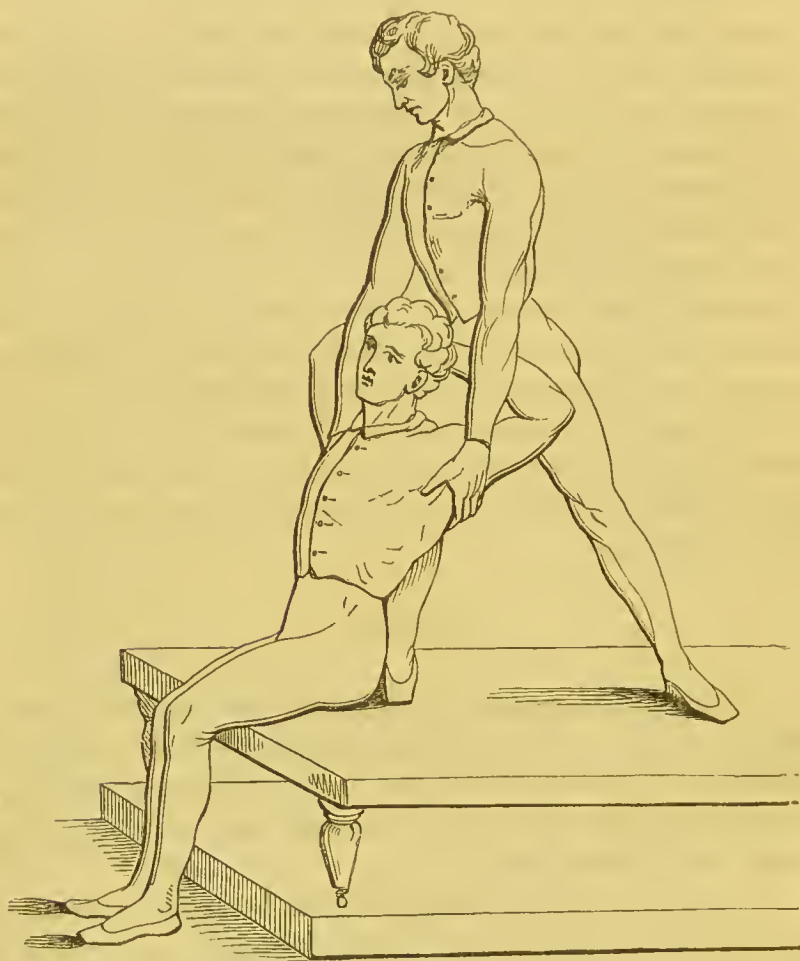
During the paroxysm of asthma, an infra-costal vibration on the anterior and inferior parts of the chest, continued for some minutes, acts especially on the pneumogastric nerve.

In asthma (feeling of suffocation) produced by stagnation



of the blood in the lungs, and by other affections of the chest, the following movement is recommended.

Friction on both sides of the chest.



The patient, who is in a sitting position, keeps both his fore-arms behind the head, above the neck; his feet are fixed by an assistant, and the operator stands behind him on the seat, and makes hard and repeated frictions from both sides of the lowest part of the chest, up to the elbows, while the patient leans on the outside of one of the operator's legs. This movement modifies, in a high degree,

the circulation in the organs of the cavity of the chest, and very often relieves the pains.

We quote from Rothstein the following as a practical instance.

*Case.* A patient, fifty years old, suffered since his twentieth year from shortness of breath; the disease increased yearly, and became at last most distressing emphysema; the periodical attacks since the thirtieth year were produced partly by external, and partly by other causes, and the patient was, for a longer or shorter time, in the most terrible state. All the symptoms of this disease appeared in a very violent form, as painful inspiration, a feeling of suffocation (*râle sibilant*), gasping, painful pressure, and throbbing in the head and neck, singing in the ears, etc.; the patient also had a burning pain in the pit of the stomach, sometimes pain between the shoulders; the paroxysms lasted from the evening to the middle of the following day, and were most violent during the night. The patient himself describes his pains as follows: "The tortures which I suffered, and which became worse from year to year, cannot be described: during the paroxysms I was in a sort of frenzy; I would tear all in my way, and it was the greatest effort to me, when subjected to such severe torture, that I did not destroy life by violent means. I often, during the night, jumped to the window, in order to throw myself out, and to free my oppressed chest."

This patient, after having consulted for a number of years several physicians, and having been treated without any success, resolved finally to take his last resource in the treatment by movements. The prescription was—

1. Frictions of the loins from the spine forwards, combined with vibration, while the patient is in a reclined sitting position.
2. Passive rotation of the feet.
3. Active-passive flexion and extension of the feet.
4. Passive rotation of the thigh.

5. Active-passive flexion of the passively extended leg in different levels.

6. Longitudinal hopping of the back, in the opposite standing position.

7. Active-passive pressing down of the leg, in the reclined sitting position.

8. Active extension of the leg, while the foot is passively extended.

9. Lateral vibration of the windpipe, in the standing position.

10. Separation of the knees, in the reclined sitting position.

11. Vibration of the loins, in the reclined sitting position.

The patient began the treatment when he was suffering from daily attacks, and without any change of the movements he was relieved from his tortures soon after the first week; he continued for some time active movements, and has since then been quite well, even during those periods when the fits always appeared. Most of the movements were in this case derivative, and not directed immediately upon the respiratory organs; only the first, fifth, and ninth were the most direct specific movements, but which acted in an entirely different manner upon the organs of the chest, as those movements, like the movements with dumb-bells, the backwards bending and the heavings, etc., produce a momentary alleviation by the mechanical dilatation of the chest, and which are employed by ignorant people, because they believe they find real benefit, though, in fact, there is only a momentary improvement.

*Case.* A lady had suffered for more than twenty years, and almost continually, from a violent asthma, which quite exhausted her vital strength; the first eight days after she was submitted to the treatment by movements, under Branding's directions, the paroxysms ceased, the strength returned, and the improvement continued till her perfect cure.

## CONSUMPTION.

Ling advised movements as soon as the lungs show traces of incipient ulceration, and difficulty of breathing, cough, congestion of the chest, inflammation, and formation of pus become manifest.

Dr. Neumann also cured different cases of tubercular phthisis, even when combined with irregularities of the heart, by derivative and absorbent movements. If the relaxation of the external parts of the thorax or lungs, and the difficulty of breathing cannot be relieved; further, if the perspiration during the night continues or increases, then the movements will no longer produce the desired reaction, and therefore they must be then considered as an auxiliary of chemical remedies, with which they act as a palliative, without preventing the fatal termination.

## PREDISPOSITION TO PHTHISIS.

Ling himself, and his successor (the present director of the Central Institution at Stockholm, Professor Branting), were cured of this disease by movements. Dr. Bogoslafsky, at Petersburg, says that, after having been for more than thirty years inconvenienced by piles, he was miserably reduced and exhausted by hæmoptysis, obstinate cough, severe asthma, and all the symptoms of phthisis developed in the highest degree; in this condition, he tried those movements which derive the blood to the loins, legs, and feet, and they re-established his health, which has kept good the last five years.

Besides the general derivating movements, those must be employed which strengthen the external parts of the thorax (see the movements for narrow chest), and increase its capacity without increasing the congestion of the lungs; therefore these movements must be principally passive, such as gentle longitudinal frictions on the arms,



sides, and back downwards, point-vibrations below the chest, pumpings and soft movements upon the stomach, the midriff, the nerves, and vessels below the ribs, in order to strengthen these relaxed parts.

*Pumping.*—The pumping is an entirely passive movement, the commencing position of which is the following:

The patient is in a supported sitting position, with his arms hanging down quite passively; the operator stands behind the chair, puts both his hands on the sides of the patient's chest, strokes them gently to the armpits, which he holds, and raises the shoulders of the patient, which he keeps in this position for half a minute or longer; afterwards he lets them gently down, and begins again the same movement, which is repeated from three to six times. This movement produces, in the generality of patients, a very agreeable feeling, caused by the artificial passive imitation of the respiratory movements.

In shortness of breathing, the passive heaving of both arms in the armpit may be considered among the most important means of affording relief.

Other useful movements for increasing the capacity of the lungs are—loud speaking in an articulated, slow, and equal manner; singing without any effort, as well as blowing the flute and sounding of trumpets; the entirely passive driving in a carriage; floating movements in sea voyages, and riding on horseback, which is properly a passive-active movement, and must be regulated in such a manner that the lungs may not be put either into too strong or too weak a movement, too long or too short a movement, and the patient must not be obliged to retain his balance so as to keep himself during the ride continually in such a straight position, like the healthy rider; the horse also must be well selected, according to the strength of the patient, otherwise the qualitative movements of the horse may become injurious.

*The balancing-bar.*—The balancing-bar, which generally consists of the stem of a tall and straight-grown fir-tree,



from thirty to sixty feet long, is used as the best substitute for the riding movements, because they can be regulated in such a manner as that—(a) the movement is as gentle as desired, or its intensity increased to the highest degree. (b) It can be directed, according to our wish, to every point of the lungs or diaphragm, by different planes and angles of the position of the patient. (c) It may remain entirely passive, because the patient can be entirely held by the assistants during the vibrating movement.

The thickest end of the balancing-bar is supported by a post, and may be raised or lowered at pleasure by means of an iron peg, made to pass through the holes bored in the sides of the post; the stand supports the bar, somewhere about its centre, which can also be lowered or raised in this place. One part of the bar remains without support, and consequently wavers when any weight is placed upon it.

*Case of phthisis and its treatment.*—In order to show practically the treatment of phthisis, we quote a case which we had an opportunity of watching ourselves, from the time the patient commenced the movements.

The patient was twenty-six years of age, and was principally employed at needlework; she was extremely nervous, irritable, and very thin; feet and hands generally cold; continual tickling in the throat, cough; sometimes spitting of blood, in small quantities; the expectoration moderate, slimy, greenish, and like pus; the upper parts of both lungs, during the percussion, yielded a dull sound; short breathing; a little stooping, in consequence of weakness in the muscles of the back, the shoulders projecting forwards; the digestion deranged, sometimes no appetite, and at other times vomiting; frequent diarrhœa; menstruations regular as to time, but little and only during one day; leucorrhœa; the skin dry and flabby; the countenance livid; blue circles round the eyes, which were sunk in, the sclerotic coloured like

mother-of-pearl ; the lips blue ; the pulse almost insensible ; great weakness, and continual fear of death. It appears that the cough began about eighteen months ago, and that depressing mental influences, as well as neglect of the necessary therapeutic means, had very much increased the disease. Four physicians, one of whom was myself, considered her incurable ; notwithstanding this, besides the medicines which I thought necessary to allay her sufferings, movements were employed, although there was no reason to expect from them any success ; I wished, however, to do all that art could suggest. We have no exact copy of the prescription, but, as far as we remember, the movements were :—

1st. Transversal frictions of the loins from the spine downwards, while the patient was in the supported sitting position.

2nd. Active-passive extension of the leg, previously placed and kept by the assistant in the same position.

3rd. Active turning of the trunk in the upright standing position, with the assistance of the operator.

4th. Active-passive extension of the trunk in the high long-sitting position, till the trunk was almost in a horizontal line with the legs, and passive-active flexion from this position in the sitting one.

5th. Active-passive pressing down of the extended leg in the reclined supported sitting position.

6th. Lateral vibration of the larynx and windpipe, with the double parallel frictions of the throat, and frictions down both the shoulders.

7th. Vibration on the lowest part of the windpipe, and longitudinal frictions with separated fingers on the larynx, downwards.

8th. Pumpings.

9th. Passive flying. The patient is in a standing position, and leans with the head on the chest of the operator, who stands on an elevated level behind the patient ; the operator seizes the entirely passive arms on their lowest

parts or on the hands, and makes quick or slow flying movements, three, six, or nine times, one after the other. After an interval this movement is repeated.

10th. Passive rotation of the feet, and active-passive extension and flexion of the feet.

11th. Passive rotation and active-passive extension and flexion of the hands.

12th. Active-passive extension of the leg in the half-standing position, with hips held, resting with the thigh on a transversal bar.

13th. The active-passive raising of the trunk from the stooping-standing position to the upright one.

The patient is in the stooping-standing position, with the arms hanging down passively; the operator stands on the left side, puts one hand on the stomach, the other on the neck, on which he moderately presses, while the patient tries to regain the upright posture, by gradually and uniformly moving the head and body backwards.

14th. Circular frictions, alternating with vibrating movements, on the relaxed abdomen of the lying patient, for five minutes.

15th. Longitudinal frictions of both sides of the chest, from below upwards to the elbows in the supported sitting position.

16th. Active-passive flexion and extension of the arms, in the sitting position.

17th. Active flexion of one leg, in a half-standing position, while the other rests backwards on the point of the foot, on an elevated level.

These different movements were not employed at the same time, and not in the above-mentioned order.

(We must observe, in general, that the derivative movements must begin with such as act only on the most remote articulations, as, for instance, the rotation, flexion, and extension of the feet and hands. If the muscular action of these parts is a little stronger, or their temperature higher, we employ the flexion and extension of

the legs, afterwards the pressing up and down of the entirely extended legs; if the strength of the patient increases, then we can begin with the flexion and extension of the fore-arms.)

Two months have passed since this treatment was commenced; the chest of the patient has developed more than half an inch in the periphery of the thorax; the breathing is less short; the countenance is less livid; the blue circles round the eyes have disappeared; the eyes are less deep; the lips red; the cough not changed; the expectoration not so much, spitting of blood seldom and less, and of the same nature; no diarrhœa; the whole position (attitude) of the body more upright; the cold of the feet disappeared for some days; the hands less warm than the body, but considerably less cold than previously; the strength of the legs very much increased; she walks easier; has sometimes a little discharge of blood, with hard stools; the period of death, which she expected during the summer, she now postpones to the spring, because she feels stronger; the pulse is weak, but considerably more perceptible than some weeks ago.

*Cases.* Dr. Neumann treated, without any use of medicines, eight cases, in which either perfect recovery or at least great improvement was produced, after some weeks of the treatment by movements. He quotes particularly a case of a young man, aged twenty, with the phthisical diathesis considerably marked, who, for years, suffered from hoarseness, pains in the larynx and windpipe, and much expectoration. Vibrations on the painful organs, without extending the anterior muscles of the throat, frictions of the thorax, and active movements of the lower extremities, produced in a few weeks a disappearance of the hoarseness, diminution of the expectoration, and all other morbid symptoms. The other patients were treated in the same manner; but they began by slight passive movements, which only by degrees were changed into partial active and general active movements. Dcri-



vation of the arterial blood to the lower extremities by active specific movements of the flexors and extensors, etc., always seemed to agree better with the patients than similar movements of the upper limbs.

#### ACUTE ŒDEMA OF THE LUNGS AND INCAPABILITY OF EXPECTORATING.

“I do not know a better treatment than to put the patient (who begins to be benumbed, and who is unable to expectorate) in an upright position, to keep him on the arms, to shake his shoulders, to knock on his back, to excite him by repeated screaming to expectorate, and to remove with the fingers the slime from the posterior part of his mouth. Many persons on the point of suffocation are saved from this danger, and I am astonished to see many medical men allow patients so circumstanced to lie quietly, and to continue their rattling till they die” (Richter).

#### EMPHYSEMA.

Arm-movements are not to be practised. Active movements of the legs, abdominal muscles, and back, used moderately once a day, but continued for months, are necessary.

#### ADHERENCES OF THE LUNGS

Are treated by frictions in a straight line, on both sides of the chest, alternating with a vibration round the thorax, while the patient keeps his arms raised and fixed on an object during this passive movement.

*Partial adhesions of the lungs on one side.*—Movements acting more especially on this side are necessary.

#### BLOOD-SPITTING.

The patient must not make any active or passive-active movements with the arms. Longitudinal frictions over the false ribs, with slight and alternative heaving or pumping



under the arms, and turnings of the trunk, regard being had chiefly to the midriff, are the specific movements for this symptom.

## DISEASES OF THE HEART.

The patient is not permitted to make violent movements, but during the treatment the following principles must be taken into consideration.

1st. The irritability of the parts near the heart must be diminished, by the natural raising and keeping upright of the spine, which is the first condition for the necessary dilatation of the chest.

2nd. Too violent an afflux of the blood to the heart must be diminished, by an equal distribution of the blood to the other parts of the body, especially to the pelvis, legs, and lower parts of the arms, by active movements of these parts.

3rd. The disposition for too great nutrition of the heart must be diminished, by deriving the blood from the heart to less dangerous organs, for instance, the chine-bone, the legs, etc. ; by which means the nutrition is increased in these parts and diminished in the diseased parts.

In order to know the nature of these diseases, Ling proposed (twenty-two years ago, when auscultation and percussion were not so well known) the following diagnostic movements. The patient leans towards a free standing prop, his left hand is raised up, and his chest also kept up by an assistant, in an obliquely forward standing position; the physician presses cautiously one hand on the last rib, and with the edge of the other either between the ribs of the chest or between the sixth and seventh vertebræ of the back, while the assistants slowly increase this pressure, as well as the bending forward of the patient on one side. If the patient feels a strong pain in the heart, this is a symptom of aneurism; if he feels more external heat, it is a

rheumatic fit; if he feels a numbness, and as if the heart would cease to beat, it is atrophy; if he feels a yearning, it is flatulency; and if there is a great moveableness, it is a spasm of the heart; if the number of the pulsations is increased, then the volumen of the heart is irregular. Some patients feel as if the heart were too large and raised up, and that it has not space enough.

These diseases must be treated with the greatest caution, and the circulation of the blood must be rendered more regular, either by conducting it to or deriving it from the heart. The first is done by manipulations towards the heart, along the more or less accessible blood-vessels, and by hard ligatures on the arms and legs; the second, by the similar distribution of the blood to the capillary vessels of the skin, so that their activity becomes increased. Besides the movements similar to those prescribed in the diseases of the lungs, others are necessary, which the physician must choose according to the state of the heart and its pulse, whether quick or slow.

Walking, or riding on horseback, are too partial movements, which, by the necessity of continually keeping the balance, increase the circulation of the blood in the lungs, and consequently in the heart, therefore the patient must either ride in a carriage or quietly rest, in order to be able to take the necessary fresh air.

1. *In fainting*, which is produced by a perturbation of the functions of the heart, parallel frictions on the blood-vessels on both sides of the throat are used.

*Fainting*.—Awakening passes on the forehead, frictions of the limbs, horizontal position, the passive raising of the arms above the head (Piorry).

2. *Exudation in the pericardium*.—The resorption in the pericardium is increased by very slight percussions with the palms of the hands, in different directions, on the side of the chest.

3. *Insufficiency of the valves of the heart, and stenosis of the orifices of the heart*.—In the beginning, point-vibrations

with the fingers held apart are employed, outside of the clothes, on those parts of the thorax which correspond to the heart; if the patient is already accustomed to these gentle vibrations, the chopping or knocking is employed, as soon as we wish to increase the effect of the movement; and in this case, the thorax is always covered with a thin dress, in order to be secured against the immediate influence of the fist. As the heart is situated so deeply and securely in the cavity of the chest, and in such near contact with the lungs, and by the circulation of the blood with all other organs of the body, it is very necessary, in order to increase the absorption in the veins of the heart, that these movements be combined with the percussion of the thorax, passive rotation of the arms or of the trunk; in order to bring down the blood to the lower regions of the body, active rotation and some other active movements of the feet are used.

The explanation of the success of this treatment in organic diseases of the heart, given by Dr. Neumann, is this: he finds an analogy between the excrescences of the endocardium (which he considers as the products of a previous inflammatory state) and the fibrous or tendinous texture of cicatrices from ulcers, which had formerly been of very long standing. As indirect pressure can be used for increasing the absorption of these excrescences, the movement is substituted by vibrations, point-shaking, chop-pings, percussion, etc.

*Hypertrophy of the heart.*—To the specific movements belong passive movements of the arms.

Boek, in his "Pathological Anatomy," says that strong active movements of the arms, principally of the left, easily produce hypertrophy of the heart; which is also a proof of a new formation by active movements. According to Neumann, passive movements of the arms (as the rotation) increase the energy of absorption in the veins of the arm; and hence also in the veins of the lungs and heart.

*Trembling of the heart* is treated by vibration of the

passively extended arms in the sitting position without support; the patient's arms are passively extended outwards, and horizontally held by two assistants, who stand on each side of the sitting patient, and, with both their hands holding the arms, make at the same time a slight vibratory movement, which is sometimes repeated, and acts principally on the heart.

*Palpitation of the heart*, if merely a nervous symptom produced by hypochondriasis and spinal irritation, is improved by active movements, and increased by rest and a stooping-sitting position.

#### DISEASES OF THE STOMACH.

*Chronic catarrh of the stomach and bowels, flatulence, and obstruction* are treated by movements increasing the activity of the abdominal muscles, the contraction of which produces a squeezing of the liver and gall-bladder, by which the excretion of blood and gall is promoted, as in a sponge (Richter).

*Specific movements*.—1. If the secretion of the gastric fluid is increased, which shows itself by acidity, sickness, nausea, vomiting, retarded digestion, and other gastric symptoms, *a sudden vibration, combined with pressure under the false ribs of the left side of the body*, directed, from downwards and outwards, upwards and inwards, is employed, which movement is called the *left infra-costal vibration*.

2. If the functions of the stomach do not become regular by the general treatment of other abdominal diseases, of which the disorder of the stomach is but the consequence, active-passive extending movements, active flexions of the trunk, and, if these are not sufficient, pressing movements on the centre of the diaphragm and on the bowels, are prescribed.

#### GASTRITIS.

As an instance of the treatment of the diseases of the digestive organs, the following may serve. The history of



the disease was written by the patient himself, and is communicated by Rothstein.

“ The first symptoms of my abdominal disease appeared in the year 1828, when I was seventeen years of age. My appetite was exceedingly great, and as soon as I satisfied it, I became unwell. In consequence of this I had recourse to medical advice, which I made use of at different times, and by which my disorder was relieved for a time, but never cured ; on the contrary, it increased yearly. My appetite became so ravenous, that I trembled sometimes throughout my body. If I took anything, especially if I drank a glass of water, I became ill-tempered. I had eructation, and felt very tired ; my wish for drink, with burning thirst, was also very much increased. At last my stomach became so bad, I was obliged to restrict my daily food to some biscuits and a little fluid. I continued this manner of living, but felt so tired, that I employed every hour my business permitted to sleep, without feeling any strength after it. I felt better on those days on which I took a purgative, which I did generally once a week. Having already consulted many eminent physicians without success, I lost all hope of my health being re-established, which was the more natural, because I became such a hypochondriac that the least thing produced anger and excitement. Finally, I sought relief in the Central Institution (at Stockholm), in which I began the treatment by movements, December 22nd, 1844. A few days afterwards I was a little better, and after six weeks my disease was almost entirely cured ; my stools were as regular as they were irregular before, and I was quite changed. From that time my temper once more became cheerful. I ate and drank whatever I liked, without previously asking very anxiously whether I might or not ; and as I have been in this state of good health more than a year, I can say with perfect confidence



that I owe it to the movements, which I wish may be as useful to all those who, like me, have been tortured so long by disease.

“Stockholm, April 21st, 1846.”

“L. GR———.

Professor Branting, who made the diagnosis of *gastritis chronica*, prescribed the following movements:

1st. Active turning of the trunk and flexion forwards, in the half-extended walking-standing position.

2nd. Active flexion of both knees in the stride-standing position.

3rd. Active-passive raising of the trunk from the opposite stooping-standing position.

4th. Active-passive pressing of the leg forwards, in the high standing position.

5th. Passive-active movement of the arms forwards from the position arms extended outwards.

6th. Active extension of the knee in the half-crouching position.

7th. Active-passive turning of the trunk, in the high half-lying position.

8th. Concentric and transversal kneading of the stomach in the stoop-standing position.

9th. Passive rotation of the thighs.

10th. Pressing on the stomach and loins, in the stride high-sitting position.

11th. Turning of the trunk, in the extended stride-sitting position.

#### DISEASES OF THE LIVER.

The diseases of the liver, which show themselves by irregular functions of the abdomen, nervous irritability, etc., are treated—

1st. By movements on the bowels similar to those mentioned in the treatment of piles. (See Piles.)

2nd. By general active movements which produce an equal distribution of the blood in the whole body.

3rd. By movements which produce a stimulating effect on the right side, and become by degrees stronger.

These movements are done with the right leg and knee ; and as they are double, they must be repeated more frequently with the right than the left leg.

4th. A specific movement on the liver is the *right infra-costal vibration*, exerted on the right side, like the left infra-costal vibration on the left side.

The effect of this last movement, combined with pressure while the abdominal muscles were in a relaxed state, was very surprising in the following case of disease of the liver, cured by the infra-costal pressing vibration.

*Case.* A young female of Wermland, suffered for many years from a disease of the liver, complicated with ascites, hydrothorax, and anasarca : breathing very difficult ; the slightest movement suddenly produced suffocation ; and the exhaustion of the vital strength, in general, was very alarming. Although treated by movements for three months, no considerable improvement was observed, except a diminution of the oppression. Professor Branting therefore wished her to try elsewhere some other treatment, to which she would not consent ; the right infra-costal vibration was then employed, and after a month, the liver was considerably diminished, the breathing became free, the chest and abdomen without exudation, and at last the patient recovered.

*Plethora abdominalis, or hypertrophy of the liver*, generally called *disposition to piles*. We use movements of the trunk, with deep breathing. In the more advancing ages of the disease, in which it is combined with pains of the liver, *the horizontal position of the body*, which is *only supported by the hands and feet*, is suitable (Richter).

#### DISEASES OF THE SPLEEN.

The diseases of the milt are treated by movements similar to those of the liver, only their local effect is

directed upon this organ, and in general more to the left side.

#### DISEASES OF THE GALL-BLADDER.

The diseases of this organ, and accumulation of gall-stones are treated like the diseases of the stomach, only the influence of movements is more directed upon this organ.

To the movements useful in these diseases belong also the *passive rotation*, principally of the *right thigh*, while the patient is in a reclined supported sitting position, and while the right leg is passively flexed in the knee.

#### CONSTIPATION.

On patients previously treated by sulphur, in this disease the movements act with great difficulty, while they cure it very soon in those cases in which this remedy has not been used.

*Specific movements* are—1. *Concentric frictions on both sides of the abdomen*, while the patient is in an upright standing position, with the arms extended upwards, are firmly held with the hands on a fixed object, by which position the coverings of the abdomen are extended. These frictions diminish in this position the quantity of blood in the parietes of the abdomen, and increase the external activity in the bowels.

2. *Active rotation of the trunk*.—A rotary movement of the trunk, while the patient's knees are fixed in a sitting position, restores the normal action of the bowels, facilitates the secretion of the bile, increases the arterial activity and innervation to the organs within the pelvis (Georgii).

3. *Passive-active flexion of the trunk backwards in the stride-sitting position*.—The patient sits, his feet firmly fixed to the ground by an assistant; the operator stands behind him, pulls the upper part of the body uniformly backwards, until it has reached the horizontal position, while the patient opposes a moderate resistance. This movement

acts on all the abdominal muscles, and more especially on the recti abdominales; in consequence of the increased tone of these muscles, they act more powerfully, and stimulate the propelling action of the bowels, etc. (Georgii).

4. *Active flexion of the trunk forwards and obliquely aside, forwards and backwards*, for instance, right and forwards, left and backwards, etc.

5. *Active-passive drawing upwards of the thigh, to the abdomen.*

6. *Active flexion of the trunk in the half-lying position on the back*, with assistance.

7. *Extension of the trunk, and stemming in the horizontal position*, while the body is supported only by the hands and feet.

8. *Active turnings of the trunk*, which, according to circumstances, may be made to act directly on the small intestines, the colon, the liver, etc. etc.

9. *Active drawing up* of the extended legs, in the lying position on the back, till a right angle is formed with the back.

10. To increase the contraction of the great bowel, *angular frictions* are made on the right side from downwards to upwards, then transversely to the left hypochondrium, and on the left side from above downwards, corresponding to the form of this organ, while the patient is in a lying position, with the feet a little drawn upwards, and the head a little elevated.

11. *Passive-active pulling down of the trunk, in the high long-sitting position.* The patient, in a high long-sitting position, places both hands together and on his forehead, his feet are fixed by an assistant; the operator stands behind him and pulls him gently down to the lying position, while the patient tries to resist, as if he wished to remain in the commencing position.

12. *The crouching position* during the excretion of the faecal matters is very advisable to those suffering from



obstruction, principally if caused by inactivity of the rectum; the pressure on the bowels is also considerably increased, without the danger of a rupture connected with that in another position.

13. Gardening, riding on horseback, wood-sawing, in the walk-standing position, alternately with both arms.

## DIARRHŒA.

1. *Concentric frictions* on both sides of the relaxed abdomen, while the patient is lying or standing, with his arms passively hanging down. Here these frictions increase the circulation in the muscles of the anterior abdominal parietes, and the absorption in the bowels is more active.

2. *Gentle vibrations, alternating with slight pressures on the abdomen*, or combined with each other on the abdomen, while the patient is in an inclined lying position.

## PILES.

According to whether the disposition to piles is natural or artificial, produced either by dynamic influences (as for instance, grief and sorrow, continual intellectual labours), or chemical (as too rich food, spices, stimulants, etc.), or by mechanical influences (as trades connected with continual sitting, or bowing positions, pressure of tight dresses, too great effort during the motion, etc.), the movements as well as the other dietetic rules must also be varied.

To prevent the further development of incipient piles, their causes must be removed as far as possible; the necessary movements are—

1. Those which strengthen the weakened abdominal muscles, as for instance, the movements mentioned under the head of constipation, Nos. 8, 9, 10, 11.

2. Such movements as derive the venous blood from the bowels, as for instance, the different passive movements on the lower extremities.



3. General active movements, acting, according to the state of the disease, on the upper or lower extremities.

4. Movements which more equally distribute the blood in the capillaries of the skin, strong longitudinal frictions along the back and abdomen, etc.

5. Passive manipulations on the sacrum and pelvis; on the first by knockings, on the latter by pressures.

If the sacral region is put into a state of sensitiveness by continued gentle movements, the chest and head are generally relieved. This sensibility must be kept up, with the most cautious treatment, at least during one, and for the most two weeks, during which time the patient makes active-passive heavings of the arms, and active movements with the thighs in a forward bent-kneeling position, and more passive flexions of the trunk in all four directions. Some days afterwards, flexions of the trunk forwards are used, with longitudinal frictions and pressures on the back, as well as turnings of the trunk in the half-lying position, and finally quick turnings-over of the trunk.

Here we must recollect all that is mentioned in the chapter on the prescription about the changes, the intervals of the treatment, etc. As soon as the piles break, the strongest movements are stopped, and even the more gentle movements are also diminished as long as the discharge just mentioned lasts.

*Piles, with discharge of mucus.*—If the patients suffer from the so-called slimy piles, they are treated in the beginning according to the previous directions, the movements are longer passive, and as they have a particular disposition to flatulency, retention of the developed gas, a kind of spasmodic cough, an irritation of the windpipe, etc., besides the general treatment, we make use of movements on the pit of the stomach and under the ribs. Strong sawings on the neck, longitudinal frictions on both sides of the throat, above the shoulders and down the arms, the positions acting on the diaphragm, as flexions and turnings of the trunk, are necessary; and if the rectum

be very relaxed, spasms or blind piles be present, active stride movements and manipulations on the chine-bone down to the bottom are employed.

*Piles, with hæmaturia.*—The specific movements are—

1. Gentle absorptive passive movements in the stride-lying and sitting position, as frictions on the internal sides of the thighs, and on the perineum.

2. Frictions, with pressure outwards to the loins from the regio pubis.

3. Sawings over the loins next to the kidneys.

4. Active-passive and gentle stride movements, first with one side alternating with the other, then with both loins, are but finally prescribed.

*Piles, with discharge of mucus from the sexual organs.*—The treatment is similar to that of hemorrhoidal hæmaturia.

*Suppressed piles*, causing mental diseases. After a sudden spontaneous or artificial stoppage of discharge of blood or slime, persons suffering from piles often become lunatics; these must be treated immediately, without any loss of time, by movements acting very violently on the brain, which must all be done in a horizontal position, and the patient must be overturned, and as quickly as possible kept up and down by the assistants.

Many fear this overturning, because they wrongly believe that the blood acts only by its weight, and that it comes in too great a quantity to the brain; if the first were the case, the blood would never flow to the head in an upright position; with respect to the too great quantity, the blood is pressed on to the brain only, if the patient being nervous retains his breath, and actively resists while his trunk is moved up and down.

If the patient is entirely passive while the overturning is made by the assistants, the head becomes cool; the effect is quite different from that which is produced by an active overturning, in which, by the compression of the diaphragm, the abdominal and other muscles, the circulation of the blood is hindered, and by its being in a continually cor-

responding rhythm with the lungs, the breathing is also interrupted and principally forced in one direction to the throat and head.

#### HYPOCHONDRIASIS,

As a symptom in hemorrhoidal patients suffering from discharges of mucus, is treated like piles and the corresponding irritability of nervous persons.

#### COLIC.

This symptom of abdominal diseases is treated by active-passive movements of the arms and legs during the spasmodic pain, and besides by different passive manipulations on the abdomen; as soon as the pains are less violent, movements of the trunk are used.

In abdominal diseases in general, it is very important to combine the passive movements which act directly on the abdominal organs with active-passive movements of the legs, for otherwise the effect would last but a short time. In abdominal diseases, kneading, frictions, pressing, and percussion are very important; the part in which the morbid organ is placed must be chiefly acted upon.

#### DISEASES OF THE KIDNEYS.

Although it is as impossible to dissolve an already-formed stone by movements, as to do so by medicines, the former may still prevent the formation of gravel, by increasing the mechanical influence acting on the removal of the different secretions of the diseased matters. This preventive cure is effected by the following specific movements.

1. Active movements of the loins and the separating and bringing together of the legs, flexion of the knees in a stride-standing position, etc. etc.

2. Flexion of the trunk in a forwards bent position, directed obliquely on that side in which the pains of the kidneys are felt.

3. Movements that separate and again bring together the legs, combined with flexions forwards.

4. Pumping.

5. Very gentle raisings of weights.

Between these single movements, for which some effort is necessary, the intervals must be a little longer. As the diseases of the kidneys often appear only in paroxysms like other abdominal diseases, the general treatment is similar, and is combined with the specific movements just mentioned, according to the individual strength and degree of the disease. The final treatment must consist in active movements directed principally upon the spine, sacrum, pelvis, and the legs.

## DYSURIA.

If the patient is prevented making water by spasm, stricture, or other reasons, the specific movements mentioned in the prevention of gravel must alternate with—

1. Slight longitudinal frictions, and

2. Point-vibrations upon and on the urethra.

3. Slight circular frictions on the perineum ; afterwards

4. Movements of the loins in a standing position, which begin with the knees bent outwards, while the assistant slightly presses on the shoulders of the patient.

5. Rotation of the trunk in the sitting, and afterwards in the standing position.

*Incontinence of urine and diabetes* are treated by similar movements, chosen according to the respective causes and state of the disease.

*Cystodyne* is allayed by a double pressure directed by the fingers of both hands upon the plexus sacralis of the great sympathetic nerve.

*Colic* is allayed by flexions of the trunk (Richter).

Spasmodic pains in other organs of the pelvis are allayed by pressures.



## HERNIA.

The disposition to hernia, and sometimes hernia itself, have been cured by movements acting on the parts which surround the rupture.

*Crural hernia.*—The movements must act on the tendinous expansion of the abdominal muscle, and those co-agents principally around the inguinal ring. The truss must be taken off during the movements, which are principally directed on the anterior parietes of the abdomen; the more so, if the bowels act irregularly, if flatulency, spasmodic cough, etc. exist.

The patient lies on his back and raises his legs, which are put in a bent position on the shoulders of the operator, while the latter tries to allay the rupture. The raising of the legs above the shoulders, combined with vibration, relieved a patient so much, that he desired its repetition (Richter).

## GONORRHOEA.

Dr. Liljewalk, physician of the Garrison Hospital at Stockholm, employed the movements in this disease, having seen their good effects under Professor Branting's prescription, and says: "The difficulty of employing all the originally prescribed movements induced me to use only the percussion on the sacrum, which I considered the most essential. I employed this movement in twenty-three cases, and must particularly observe that I chose those patients in whom the inflammation was of the greatest intensity, and I only forbade them violent exercise and too much walking. The result was—

"1. It did not fail in any of the twenty-three cases to diminish in a few days the violence of the inflammation, and with more success than I had ever before seen.

"2. In fifteen cases the disease, without any medicine, was perfectly cured in the average of nineteen days,



while the medical treatment lasts here, in similar cases, about twenty-three days.

“3. In eight cases the inflammation disappeared, but the secretion from the urethra continued. I suppose that this incomplete result was owing to the over-simplification of the treatment; and probably the vibration of the perineum (which for special reasons could not be employed) would have taken the place of the remedies which I then made use of.”

The prescription in gonorrhœa is generally (besides some movements depending upon particular circumstances) the following.

1. Percussion on the sacrum, in the stride-standing position.

2. Transversal chopping on the neck, in the sitting position.

3. Pressure above the os pubis, in the lying position, with elevated back, while the separated and bent legs are drawn towards the abdomen.

4. Vibration of the perineum, in the same position.

The treatment begins with percussing the sacrum in the stride-standing position, which in the first day or two not only allays and relieves the more violent inflammation and copious secretion, but also changes the whole state of the disease in such a manner, that the following treatment by movements (different according to the state of the patient) produces an increased flow of arterial blood in the upper extremities, and the cure is very much accelerated. In the first stage, during which only a moderate stitching pain, tension, and little secretion appear, the percussion on the sacrum is alone sufficient, if repeated three or four times daily. If the symptoms become more violent, and accompanied by chordee and pains during urinating, etc., then other movements are necessary; they make use of the transversal chopping of the neck, which acts strongly against the chordee, and of the pressure above the os pubis in the above-mentioned lying position, which

increases the venous absorption of the bladder and sexual organs, by its effect on the excited nerves of these parts.

In the second period, if the urinating is very difficult, the perineum swollen and painful, the discharge mixed with blood, and fever is present, then a more general treatment is necessary. To increase the more local absorption in the urethra, vibrations along the whole tract of the perineum, from before backwards, are employed.

#### HYPOCHONDRIASIS.

The treatment is a mixture of the movements prescribed in nervous diseases and in the diseases of the abdomen, appropriated to the particular seat of the disease.

Two violent cases of hypochondriasis, attended with much suffering and a species of monomania, were perfectly cured in three or four months by the use of active movements of the legs, percussion on the sacrum, and afterwards by passive manipulations on the venous sinuses of the head.

Hypochondriasis, hysterics, and piles were cured especially by peristaltic kneadings of the abdomen, passive flexions of the trunk, and active-passive movements of the lower limbs (Neumann).

*Prolapsus ani*, in a hypochondriac, which, to the length of an inch, protruded after each evacuation for many years, was cured in five weeks by similar movements, to which were added active-crouching positions (Neumann.)

#### NERVOUS DISEASES.

Ling assumed two large classes of nervous diseases, according to whether the prevalent symptoms showed themselves in the periphery or centre, and the general treatment recommended by him differed according to the increased peripheric (eccentric) or concentric activity.

The manipulations in the first class begin on the external (peripheric) ends of the nervous ramification, and are continued towards their central parts, as from the

fingers to the neck and head, from the toes to the chine-bone and spine, from the anterior side of the thorax between the ribs to the spine, and upwards to the neck and head.

The movements in the second class of disease, with predominance of the concentric activity, begin in the more central parts and end at the periphery; as for instance, from the head to the sacrum, from the shoulders to the fingers, from the throat to the stomach, from the spine to the anterior side of the abdomen, from the loins to the toes, etc. etc.

These manipulations are combined with such positions of the body as correspond best with the individual case.

According to Ling's fundamental ideas, nervous diseases, as they belong to the dynamical agent, must be treated principally by movements acting on the mechanical and chemical agents, in order to re-establish by their increased reaction the balance of the primarily diseased dynamic factor, which is specifically accomplished by—

1. Point-shaking on the top of the head and on the back, either both at the same time or one after the other.

2. Longitudinal frictions and point-shakings, or chop-pings on the limbs.

3. Percussions on the hands and soles, etc.

Besides the known hygienic rules, the patients must principally and more particularly avoid all excitements of the senses by terror, anger, etc.

Such patients often suffer from oppression, giddiness, etc., during the movements; therefore it is of the greatest importance that the practitioner should examine very carefully whether such effects be produced by general movements or by such movements as are employed on certain parts only, because then only will he be able to prescribe those movements which are necessary.

The importance of this careful examination is very evident from the following case.

An unmarried lady, thirty-two years of age, was obliged,

after a nervous fever, complicated with a swelling of the chest, to remain for a long time in one and the same position. Subsequently she became so nervous that after two years she could not bear the least touch on any part of the head, throat, chest, back, stomach, abdomen, shoulders, or thighs, without the feeling of suffocation. From the elbows to the ends of the fingers, and from the knees to the points of the toes, she could be touched without this suffocating feeling, which was discovered only after long, repeated, and minute examination. The treatment was now directed to these less sensitive parts, in order to increase their irritability to the highest degree; and by this expedient it was diminished in all the others, so that she could now be treated like other patients (Ling).

A similar preparatory treatment is often very advisable in patients suffering from nervous diseases.

#### EPILEPSY.

If this complaint is not the result of organic disease, nor of too long standing, which is too frequently the case, it can be successfully treated by movements, the more hopefully if it is produced by abdominal diseases, worms, too early developed sexual sensibility, terror, grief, etc. etc.

The movements are employed only in free intervals, and if the paroxysms follow each other very quickly, the manipulations must be made more gently during the intervals. The prescribed movements must act principally on all the more superficial vessels, as frictions and longitudinal passes with pressure, etc., on the chine-bone, stomach, and the whole skin. The active movements must be very gentle in the beginning; by degrees they may become stronger, and are performed in a horizontal position with the head directed downwards. The abdomen is treated by movements of the legs, which induce a descent of the blood, and the strength of the muscles is equally increased; finally by general active movements. Also the use of revolving beds has been proposed, in which the



patient is entirely or partially in a lying position, with his legs directed to the centre, and is turned with greater or less velocity.

#### SPASMS OF THE MUSCLES.

The specific movements are centrifugal passes and frictions, kneadings, fulling, and pressures; in the beginning local, and at last general extension or flexion of the contracted or extended muscles.

Spasms of a single muscle cease as soon as this muscle is passively extended.

#### LOCAL NERVOUS PAIN.

The longitudinal friction with pressure on large surfaces with one finger or with the palm of the hand, which is the best, under a firm pressure on that part from whence the pain proceeds, if repeated and continued for some time, very soon allays the pain. Muller says that the propagation of neuralgic pains does not at all follow the course of the nerves—a fact which may explain how a pressing friction in one direction can soothe pains, although it be not directed on a spinal nerve. Also other frictions, pressures, and various derivative passive movements are used (Neumann).

#### NEURALGIC TOOTHACHE.

In case of toothache on one side, we place the hand on the outside of the painful part, and stroke gently, proceeding with a strong pressure down on this side of the throat, chest, abdomen, the anterior side of the thigh, leg, and foot to the toes; and if we repeat the movement after a minute and continue the process, the pain will be speedily relieved. The pressure must be stronger or weaker according to the patient's dress (Neumann).

NEURALGIC PAINS OF THE MUSCLES OF THE BACK, OF THE  
LIGAMENTARY TEXTURE, AND THE SKIN OF THE BACK,

Are cured by partial frictions. If the muscles on both



sides of the spine are painful, the active-passive raising of the trunk, in the sitting position, with divided knees and hips firmly held, is used.

If only the *ligamentary tissue of the back* is painful, we use the passive-active pressing down of the elevated arms in a standing position, with the head stooping. The patient leans with the anterior side of his thighs on a fixed horizontal object, for instance a bar, stretches his arms upwards, and bends forwards till the trunk is in an angle of about forty-five degrees with the legs; the head is kept a little upwards; the operator stands before him, and presses his arms down, while the patient endeavours continually to keep them in the commencing position.

*In pains between the shoulders*, the infra-scapular vibration is also employed. This is a pressure combined with vibration along the spinal edge of the shoulder-blades, and executed with the fingers put between this edge and the corresponding parietes of the thorax.

*Omalgia* is also treated by the infra-scapular vibration.

*Rheumatic pains of the trapezius, rhomboideus, sternocleido mastoideus*, are cured by a pressure on the nervous accessorius Willisii. This pressure and the infra-scapular vibration have cured the most violent rheumatic pains of these parts.

*Acute rheumatic pains of the intercostal muscles*, which have been considered to be pneumonia or pleuritis, on account of the fever and the severe pains described by the patients as if knives pierced the chest, disappeared within a couple of hours by a kind of kneading and rolling of the pectoral and other muscles, combined with rotation of the arms (Branting).

*Rheumatic inflammation of the aponeurosis of the nates and left thigh*, which occasioned at every movement the greatest pain, was cured in six days without medicines or bleedings, only by sawings on the suffering parts and longitudinal frictions of the skin towards the abdomen and back (Neumann).

*Secondary pains of the knees and feet* are allayed by pressure on the sciatic nerve. Neuralgic pains of the lower extremities in general are treated by pressures on the plexus lumbaris.

## PARALYSIS.

If the want of reaction of the muscles on the nerves is not based upon a disorganization of the muscular fibres, produced by an absolute corruption of the blood, poisoning, etc., movements can restore the lost muscular reaction. In the beginning partly stimulating, as, for instance, chopping, rolling, knocking, pointing, harder frictions, vibrations, etc.; partly reproductive movements, as, for instance, the different active and active-passive movements are used as corroborants; and finally, general active movements are employed after the removal of the paralysis.

## MUSCLES ENTIRELY PARALYSED.

The antagonists of very contracted muscles, as we find them, for instance, in the highest degrees of club-foot, are often entirely paralysed. Dr. Neumann found by repeated experience the possibility of re-establishing the regular contraction of perfectly paralysed muscles by frictions, pressures, and percussions of these parts which are previously mechanically extended. These movements produce molecular changes in the paralysed muscles, and at the same time excite the motor nervous filaments, if the crooked limb is made more crooked by force, in which position the mechanically-strained muscles become visible under the skin.

Neumann explains these cures of paralysed muscles by the following physiological facts. It is known that an excised, accumulated, and loaded muscle can be excited to contractions by galvanism; also that the diseased limbs of half-paralysed persons are often contracted as strongly as the healthy ones, if they are laid open after death and

galvanically influenced; finally, the galvanic stimulus, as well as that which is produced mechanically by pressure, a shock, etc., act very similarly on the living animal muscle.

Choppings of the spinal region had been principally employed, and, besides these, pressings and squeezings of the relaxed antagonists, which had been previously extended mechanically. If these muscles began to contract, specific active movements were used.

The following case is very remarkable. A musician, fifty-two years of age, almost entirely paralytic, was treated for half a year in the hospital at Grandenz with several different medicines, and at last was discharged as incurable. The disease afterwards gradually increased in such a manner that he was unable to walk across the room without assistance. The treatment by movements so greatly improved him in three weeks that he was able to walk four or five times across a moderately-sized room without resting.

This case may induce medical men to use movements in all cases of paralysis; the more so as the influence of medicines in this disease is seldom followed with any advantageous result (Neumann).

#### CLUB-FOOT.

We must examine whether the patient has no disorder of the spinal marrow and of its nerves, and whether one or both club-feet, as is generally the case, are but a symptom of those disorders; or whether the club-foot is an idiopathic disease, not at all depending upon any other, in an entirely healthy person. In the latter case, we must ascertain whether the antagonists of the contracted muscles, principally the peronei, are not only weakened but really paralysed. In the first case, the movements are done not only upon the club-foot, but naturally also upon the spinal marrow; therefore, longitudinal frictions, chopping, and other movements, are directed generally towards the spinal marrow and the chine-bone. In the

latter case, the movements must not be employed so extensively: here we must observe more attentively whether the muscles of the external side of the foot be only weakened or be really paralysed.

If weakness is present without real paralysis, the cure is easier, because then specific active movements are sufficient; this, for instance, is used in such cases: the patient stands on the healthy foot, and removes the diseased foot from it sideways, and assumes a half-standing attitude, while the assistant applies a gradually-diminishing pressure to the outsides of the toes. It is evident that in this manner the peronei muscles chiefly are exercised.

If the club-foot is really paralytic, the pressure on the mechanically-extended paralysed muscles is first to be employed. Experience shows that by this treatment the re-establishment is much quicker than by all the machines for club-feet, and that greater safety against relapses is thereby obtained, because the previously diseased foot is, after the treatment, not only in a proper direction, but in every respect strengthened, and sometimes even stronger than the healthy foot.

The treatment by machines has but little success. Experience teaches us that even if the curvature of the limb finally disappears, the atrophy of it is not cured, but rather increased; because the apparatus which mechanically extends the contracted muscles, is able to act on the paralysed muscles only so far as these paralysed muscles can contract themselves momentarily, according to the degree of the mechanical distension in the contracted muscles: therefore the molecular change produced by them can cure only an incomplete paralysis; but if this is complete, the contracted antagonist becomes by the apparatus passive, and the entirely paralysed muscle completely loses its contractility. This view is confirmed by the complete failure of mechanical operations on the really paralytic club-foot, that is, a foot in which the antagonists of the contracted muscles are completely paralysed (Neumann).



## AGUE.

Shivering, like that of an intermittent fever, or when produced by a gastric cause, may often be prevented by movements directed to the stomach, abdomen, spine, and spinal marrow; but as soon as the intermittent is developed with a certain type, the movements are not sufficient.

## DISEASES OF THE SKIN.

*Local skin diseases, which are not cachectic*, under the form of ringworm, erysipelas, and other diseases of the skin, without fever, have been treated by active movements, which act with respect to the local diseases as a derivative, and by passive manipulations on the parts adjacent to the diseased spot.

## SCARS ON THE SKIN.

A scar on the skin, even if it be strongly prominent above the level of the skin, and firmly grown together with the organs lying under it (principally with the cellular texture), the tendinous membranes and the membranes of the muscles (or even with the periosteum), in such a manner that its texture is similar to the fibrous callous, or even to the osteoid, exposed to the pressures with the end of the finger, can be cured by these means alone: that is, the resorption of the texture of the scar is effected in a shorter or longer time, according to the looseness or firmness of its texture, in such a perfect manner that the skin again becomes as moveable as the healthy part, and is often not at all discoloured, so that it is sometimes difficult to indicate its previous limits.

It is well known that many external and internal agents are employed to remove these disfiguring scars, without any success; and experience shows that if the scars of chronic, but not cachectic, ulcers of the feet are not equal in their texture with the adjacent skin, recurrence of the



disease is frequent, which is not the case if the scar be treated in the following manner.

Suppose there is a recently cicatrized ulcer of the lower part of the leg, which extends itself on its anterior (the region of the tibia) and inferior third part; the skin on a space as large as the palm of the hand coloured dark brown; in single places very smooth, and in others bright, strongly elevated, and with prominent callous edges. The cellular texture in the middle of the lower part of the leg to the ankles is much infiltrated in the circumference of the scars; it is doughy under pressure, and *pits* on pressure. As far as the dark brown coloured part extends, and principally under the heightened and smooth scars, the skin is entirely immovable, and firmly grown to the subjacent organs: where the cellular texture is but œdematously infiltrated, there is more moveableness.

The pressures exercised either by the patient himself, or, which is preferable, by an assistant, are as follows. One finger (the best is the thumb, because we can exert the strongest pressure with it) is put in the middle of the anterior side of the articulation of the foot, or on the place where the disease of the skin begins; the skin is pressed towards the subjacent tendons and bones for one or two seconds; afterwards the thumb is put close to the first place on the edge of the tibia, and presses in the same manner. This is continued in a straight line along the middle of the lower part of the leg, as far as the skin is diseased. The pressures are now made on the healthy skin, in an oblique direction on the sides of the leg towards the posterior part of the knee, according to the course of the lymphatic vessels to the lymphatic glands of the knee.

The intensity of the pressure is different, according to the sensibility of the patient, but still it must never be so strong as to produce pain. On both sides of the first pressed line, other lines are pressed in the same way, which, in order to come on the outside of the articulation

of the knee, converge as soon as the pressure is made on the healthy skin. When all the diseased parts of the skin are so pressed, an interval of one or two minutes, or longer, is allowed, till all the disagreeable feelings disappear after the pressure. Most scars are more or less painful. In the first case, the pressure must at first be very slow and gentle. After the above-named interval, and the disappearance of the pains, the pressure is repeated about twenty or thirty times, in order to obtain as soon as possible the desired effect, and according to the sensibility of the skin, whether it has or has not a disposition to inflammation. In case of the intervention of violent inflammation of the skin, whether erysipelatous or phlegmonous (which, according to experience, is very seldom the case, if the intervals are attentively observed), the pressure must for some days be entirely discontinued; which cessation is not necessary, if there be only an erythema.

After a similar treatment during a fortnight, we observe that the œdematous parts of the skin disappear more or less, and that the skin is a little moveable; the bright and very smooth scars begin to lose this quality, and already form wrinkles when moved, and in the harder strings of the fibrous texture of the scars begin to be a little more level. The sensibility during pressure has ceased entirely in many places; in others it is at least diminished.

In this manner the change of the scar-texture into ordinary skin goes on for several weeks, or, if the scars had been a long time very hard, for several months, the thick, voluminous parts of the skin are reduced to their natural size, and the red-looking, thin, bright scars become, by degrees, thicker.

Dr. Neumann quotes a very interesting case of a convict, who, after having lost, by cold and gangrene, all the toes of both feet, and single parts of the metatarsal bones, was brought to the hospital with two prominent ulcers of the anterior ends of the metatarsal bones of both feet: he

tried twice to cure these ulcers by transplantation of the skin, which did not succeed, for each time the skin was destroyed by gangrene. The cicatrization then went on by degrees, but on the anterior side of the metatarsal bones there remained afterwards a prominent small ulcer, which could not be cicatrized. Round it and on the back of the foot, the scarred skin was thin, smooth, and of a light red; the subjacent texture of the bones could nearly be seen, but better felt. This was the same with both feet; but the ulcer on the left was a little larger. The treatment by pressures, which were performed by two other convicts daily at least fifty times, and continued during ten weeks, had the effect that not only were the ulcers perfectly cured, but also the skin, as well on them and in their circumference, had the ordinary colour of the skin, and at the same time such a thickness and moveableness, that it did not the least differ from the skin of the healthy foot and lower part of the leg.

Bock, in his "Pathological Anatomy," says the atrophy of the skin, which is irregular and tender, is produced as well by an immoderate extension and pulling, as by a continual pressure. Dr. Neumann observes, this may be the case in the otherwise healthy skin, but it is not so in the attenuated texture of the scars, this is, on the contrary, changed by degrees into a thicker skin; and the same physician thus explains this process, as the pathological texture of the scars is removed by resorption, it is substituted by regular cellular tissue, by which the natural covering (external skin) is produced.

## ITCH.

Itch has been cured by general active movements, increasing by degrees in intensity, and by active-passive movements.

More than sixty patients had been cured during six weeks, at the same time and at the same hospital in

Stockholm. In the Foundling Hospital in that town, in which children from six to twelve years of age are received, they had often been infected with itch. The treatment by movements had the remarkable effect, that some rooms previously appropriated to this cutaneous disease were no longer required (Ling).

*Itching of the skin and the feeling of cold* are removed by running and jumping (Richter).

#### SCURVY

Is caused by too little or too much exercise. In the first case, the movements must be general-active, and afterwards active-passive, with increased intensity. In the second case, the movements are passive-general, and are first directed to the arms, legs, and abdomen; afterwards to the other parts of the body. These movements are used alternately with slight active-passive movements every third day.

Finally, entirely active movements are employed very cautiously.

All movements in a standing position and violent heavings must be avoided.

#### DROPSY.

If the water is only in the legs, manipulations with the palm of the hand are made in a circular form, from the knee to the toes, then passive rotation of the extended legs in the articulations of the feet, sharp and pointed longitudinal progressive pressures on the calves downwards, and finally, moderately strong percussions round the whole leg and on the soles. From time to time these are to alternate with striding movements and movements of the hips, in order to prevent the development of the disease in these parts. If the exudation is already in the abdomen, alternate bending positions of the trunk and rotation of the trunk are made, with strong passive manipulations on the abdomen and down the legs;



rotation of the arms, longitudinal frictions between the ribs, point-shaking on the stomach, in different angular positions of the trunk, are made, in order to prevent the disease in the chest. The concluding treatment consists in gentle active movements.

Much walking or standing must be avoided, and only very moderately used.

*Congestion of the capillary vessels, extravasation of blood, chronic exudations and infiltrations*, are cured by retarding the circulation of the respective veins for some seconds, in order to produce by the secondary reaction a stronger absorption. According to the longer or shorter duration of the disease, and its intensity, slight or hard pressure, frictions, compression with the tourniquet, etc., are employed daily for some minutes, and if the blood-vessels are varicose, pressures and longitudinal frictions on them are very useful.

#### CURVATURES OF THE SPINE (NEUMANN).

It has long been a disputed question, whether or not the primary contraction of the muscles, or the disease of the ligaments, cartilages, and bones of the spine itself, is the cause of curvatures. We know, however, that curvatures are various in their origin, and therefore both opinions may be right in certain cases.

The first class of curvatures is, that in which the inflammation of the intervertebral cartilages, or of the vertebræ, originates in a body, which is either—1, in a normal condition; or, 2, contains tubercles, carcinomatous substances, enchondrosis, etc., in the vertebræ; or, 3, when one lung suddenly becomes more or less atrophied; or 4, disappears entirely in consequence of empyema. These are curvatures of the spine, or of the whole trunk, in the form of cyphosis, scoliosis, or lordosis; in these cases it is possible that all the muscles may be in a normal, or at least, not in a contracted state, although the curvature may be considerable. The contraction begins only when



the patient has left his bed, and the disease of the lung or bones is stopped, and he then attempts to raise the trunk into the regular erect position. Then secondary paralysis of the muscles of one side, and contraction of the muscles of the other, become perceptible.

We understand here by muscular paralysis, the state contrary to muscular contraction, involving degrees of muscular weakness, from the lowest, which is only perceptible when the strength of the antagonistic muscles preponderates, to the highest, in which the motory nerves have no influence at all on the muscular fibres.

*The second class* of spinal curvatures is that in which paralysis and contraction of the different groups of muscles of the trunk is the primary and sole disease.

In this class, atrophy of the lungs, waste of the intervertebral cartilages and of the vertebræ, and curvature of the ribs, follow, if the disease be more developed. But even these organic changes are entirely different from those of the first class, because the regular texture of these parts is always preserved, and more especially because all pathologically new formations are excluded. Only the contracted muscles are finally changed into fibrous or adipose texture, if the contraction attains the highest possible degree, and the muscles remain thereby for many years in perfect inactivity. To this second class belong the more frequent spinal curvatures, and particularly those which especially occur in young females during their development. In the latter cases the paralysis of the inspiratory muscles on one side, and the contraction of the muscles on the other, are the most frequent cause of the curvature. There are also curvatures produced by paralysis and contraction, in which the inspiratory muscles remain entirely intact, or become diseased only afterwards while the primary disorder acts on the lumbar vertebræ, and the muscles of the meso-gastric and hypo-gastric regions.

These cases generally occur in children before puberty.

## LING'S EXAMINATION OF THE SPINAL CURVATURES.

The curvatures of the spine are most efficiently examined by the following method.

The patient stands and bends forwards, while the examiner, who is sitting, secures the legs of the patient, whose feet are placed close together within his own, and places one hand on the head and the other on the spine of the patient. He then examines the single vertebrae, while the patient tries to get upwards into the erect position. In order to know the exact lines of the curvatures, a strip of lead is placed on the upper part and pressed along the spine.

Only the above-mentioned second class of spinal curvatures is especially the object of the treatment by movements.

The first and principal method of curing these diseases by movements is to increase the strength of the relaxed muscles (that is, of the antagonists of the oblique parts), and their co-agents by longitudinal frictions, combined with slight pressure, and percussions of those muscles which are in a contracted state.

These movements are at first performed in the standing position. The patient leans on a fixed vertical pole. The arm which is on the concave side of the curvature is raised; then, in the opposite direction, a pressure is applied to the chest and the side, or to the chest and back, or to the hip and side, according to the state of the curvature. These pressures are increased by degrees, while slow longitudinal frictions are performed on the arm and loin.

Subsequently we use passive extensions: the patient is lying either on his back or on his stomach, so that at the same time strong passive stimulating movements are directed to the relaxed muscles.

Finally, active raising of the trunk, extending movements, etc., are employed; the intensity of every movement depends upon the curvature of the spine, and the general state of the disease.

Every three or four weeks we must see whether the curvature changes its angle, or is to be observed in other vertebræ, according to which the movements must be changed.

To the specific movements belong, moreover, all those mentioned in the treatment of narrow and contracted chest, and besides—1st, active-passive raising of the trunk from the stooping-standing position; 2nd, active-passive flexions of the trunk, with the head retained in the same direction, with regard to the trunk, and passive-active returning the body then moved into its previous standing position; 3rd, active-passive turning of the trunk, with hips held in a high sitting position.

#### CURVATURES FROM MUSCULAR WEAKNESS.

The slightest curvatures produced by weakness of the muscles betray themselves by an awkward position of the juvenile body. This evil is generally treated by mothers, dancing-masters, and even medical men, with various mechanical contrivances, but for the most part with the so-called constraining stay. This naturally can be of no use, because if a child, for instance, keeps the shoulders too much forwards, and also bends the head, while the back is crooked, the two pectoral muscles, the serratus anticus major, the anterior abdominal muscles, etc., become stronger, while the rhomboidei, the longissimi dorsi, the spinalis, semispinalis cervicis, and the other posterior muscles of the neck, as well as the multifidus spinæ, become weaker. Generally the constraining stay is an iron instrument, of the shape of a heart, which is put on the middle of the back, and fastened by straps round the shoulders. This instrument causes by its straps a cutting in the anterior parts of the shoulders, and thereby excites a reaction by the child against this external and continued resistance; therefore the pectoral and other muscles (which are already stronger) must make a still greater effort, by which they still further become strengthened;

on the contrary, the rhomboidei and the other muscles of the back cannot be strengthened, because the pressure of the plate itself on the back restrains them in inactivity, and may even induce their immoderate absorption.

The cause of the child's bad position, namely, the weakness of the muscles of the back, is not only not removed, but systematically increased. For this reason we ought not to be astonished, that a child who wears such an instrument is soon afflicted with a considerable curvature, and that the non-professional public believe very rationally that it is better to leave the spinal curvatures to nature (since, when left alone, they either do not increase at all, or very slowly), rather than to confide them to the hitherto usual treatment, whereby a slight curvature is often and easily changed into a larger one.

*For the slight curvatures of this class*, active movements are alone sufficient to re-establish perfectly in three or four weeks those children who carry one shoulder higher than the other, who extend the head forwards, and those whose chest is compressed in its anterior parts.

The greater part of the above-mentioned standing commencing positions, and the following movements (with intervals and the necessary attention, but without any fatigue of the body), must be executed daily from half an hour to three-quarters of an hour.

1. The rotation of the head to the right and left.
2. The rotation of the trunk to the right and left.
3. Rotation of the right arm in different directions.
4. Rotation of the left arm in different directions.
5. Rotation of both arms at the same time.
6. Rotation of one or the other leg in different directions.
7. Rotation of both arms and one leg at the same time.

These movements put in activity all the muscles of the body, even those of the cavities, and contribute to its harmonious development, which is sufficient to improve the so-called bad posture, and to cure this little derangement of the motory innervation of the body.



*For the more severe degrees of spinal curvature*, in which the paralysis of single groups of muscles is already considerable, this treatment by merely free exercises does not suffice, excepting in the after-cure. It might indeed, on the contrary, be injurious, since being too active, the contracted muscles would act alone, while the relaxed would remain inactive. In these cases we generally observe two perceptible curvatures. The convexity of the one is directed to the right, and extends mostly along the vertebræ of the chest, while of the other the convexity is directed to the left, and extends along the lumbar vertebræ.

In the most frequent forms of lateral curvature, in which the convexity of the upper curvature is to the right, while the convexity of the other is to the left, the necessary movements are—

1. Percussion of the upper and right part of the chest, and the upper and left region of the left hip.
2. Passive rotation of the right arm.
3. Passive extension of the right arm and left foot.
4. The same movement combined with pressure by the assistants upon the prominent parts in a lying position.
5. The raising upwards of the body, by an effort of the left arm, grasping a fixed and elevated peg, and sinking down again to the standing position.
6. Lying on the right side, and reading aloud.
7. Turning and raising up of the trunk in the lumbar region.
8. Active rotation of the left arm.
9. Active raising of the left arm with the help of an assistant.
10. Stemming or pushing against a fixed body with the left hand.
11. Flexion of the trunk to the right, and raising it upright, while the right arm is retained by the assistant in its downwards extended position, then flexure to the left



side, and gently returning through these movements to the commencing position.

During the percussion of the upper right part of the chest, and the upper and left region of the left hip, the patient lies in the beginning on his left side, and extends the left arm, which grasps a fixed pole. The assistant makes the percussion with the fingers held apart, begins on the spine, and continues on the right shoulder-blade, the shoulder, the external side of the ribs, and the pectoral muscles to the sternum, or in short, on the whole prominent part of the right ribs. Now the patient turns to the right, and holds with the left extended arm a fixed pole. The assistant makes the percussion now in the same manner, on the left lumbar, left and upper part of the left hip, and in part the left hip itself.

The effect of this movement is, that in the right lung, which is generally hypertrophied in this kind of scoliosis, the absorption is increased, as well as in the bones and edges of the lumbar vertebræ, which are lying to the left.

As the patient forcibly extends at the same time his left arm, the innervation and reproduction are increased in the weakened respiratory muscles of the left side, and in the lumbar muscles of the right, which are also relaxed.

By the passive rotation of the right arm, the venous absorption is increased in the right arm, and therefore also in the right lung, whereby the hypertrophy of this lung is diminished.

During the passive extension of the right arm and left foot, the patient rests on his back, while the assistants forcibly extend these extremities by pulling them for some seconds.

The effect of this movement is the promotion of the venous absorption in the muscles of the convex side of the upper and lower curvature of the spine, especially in the right intercostal muscles in the adjacent parts of the multifidus spinæ, etc., as well as in the quadratus lum-

borum, the adjacent parts of the multifidus spinæ of the left side, and thus in all the contracted muscles. By their absorption, their moveability also is prepared.

The effect of this movement may still be increased if, while the two mentioned assistants make the extension, two others exercise, during some seconds, a pressure upon the convex right side of the chest and on the left side of the hip.

The raising upwards and sinking down by the left arm consists in the following.

The patient stands near a rack or bar, fastened at such a height that he is able to attain it easily with his arm a little bent; thus holding the bar with his left arm, he pulls his body gently upwards, till he is on his toes; then he lets himself down till the left arm is in the same position as it was before. The effect of this movement is principally active stimulation, which causes reproduction in the pectoral and scapular muscles of the left side.

At the same time the upper curvature of the spine is momentarily and mechanically equalized by the weight of the half-suspended body, and the absorption in the now relaxed parts of the convexity of the upper vertebral curvature is increased.

Resting on the right side while reading aloud or singing, is accompanied by more activity of the left lung, which in this case is more used than the right for breathing. If this position and action be daily continued for some hours by the patient, the atrophied state of the left lung may be reduced to regularity. At the same time the pressure of the right lung increases its absorption, and consequently diminishes the hypertrophy.

During the turning and raising of the trunk in the lumbar region, the patient sits flexed, the trunk strongly to the right, and at the same time a little backwards; one of the assistants stems or pushes with one or both hands on the last ribs of the left side of the patient, who raises his trunk against this pressure of the assistant. He then

allows his trunk to descend on the left, retaining at the same time the direction forwards. In this manner the quadratus lumborum of the left side, and those parts of the left multifidus spinæ which are situated on the convex side of the lower curvature, together with the abdominal muscles of the left side, are put into activity, and their relaxed state diminished by the increase of innervation and reproduction. As the curvature of the spine, of the form of S, is generally accompanied by a slight turning round its axis, which is for the most part from the left to the right, it is also necessary to combine a slight turning with the raising of the trunk.

The active rotation of the left arm excites the arteriality of the muscles of this arm, and consequently of the left lung, hereby also its atrophy is diminished.

The active raising of the left arm, with the help of an assistant, is thus accomplished. The patient holds the half-flexed arm before his chest. It is there conducted by the assistant, who helps to extend it gently, and to raise it over the head of the patient. The effect of this movement is the same, but more powerful than that of the preceding movement.

The stemming or pushing by the patient against fixed objects with the left hand, the right foot being on the floor, has the following effects. (a) A contraction of the respiratory muscles, and of that part of the spinal muscles which is situated on the concave side of the lower curvature. (b) Relaxation of the intercostal muscles of the right side of that part of the right multifidus spinæ which is on the convex side of the upper curvature. In this manner both curvatures become more equalized, and the spine approaches nearer to the straight line.

The gentle active-passive flexion of the trunk to the right, and the passive-active raising to the left, is one of the most important in the cure of this disease, and produces a kind of scoliosis on the opposite side (at least during the motions), acts therefore at the same time on

the muscles of both the dorsal and lumbar curvatures in an equal manner; and if repeated, according to Neumann, daily between fifty and a hundred times, it has the most powerful effect, even if the scoliosis be very much developed.

In different cases, the diminishing of the curvatures has been already considerable after a fortnight; therefore, the greatest caution is necessary with very strong scoliotic patients, and the passive absorbent movements must always be previously employed, in order to avoid bursting of the blood-vessels of the chest, or the accession of inflammatory diseases, since the hitherto paralysed muscles often become so quickly reanimated, and act so soon in a reproductive manner on the bones, that the hypertrophied and-atrophied organs of the chest cannot re-form themselves with sufficient rapidity to keep pace with the external parts.

#### COXALGIA.

*Coxalgia* (disease of the hips) can be cured before the dislocation of the thigh-bone. The patient is entirely passive. All movements are performed in a lying position. Friction in one direction is applied round the loins, and longitudinally on the posterior and internal parts of the thigh.

A good examination of hip diseases is obtained by placing the patient, who must be entirely passive, on his back. His hips are firmly held by an assistant, while the examiner stretches the legs, in order to see whether the knees and heels be in their normal position.

*Stiffness of the limbs* is treated according to the angles corresponding to the articulation in its healthy state.

Stiffness produced by injuries after improper or neglected bleeding (venesection) is very difficult, and often impossible to be cured; but those which are caused by contractions of the muscles and tendons are cured by frictions, combined with pressure and slow extending movements.



It is evident a real ankylosis cannot be cured, but a false one can be diminished, even in persons sixty or seventy years of age. It can also be cured if it arises from a dislocation which is improperly replaced. If the elbow or knee be the part diseased, an extension by a weight or by assistants is necessary during the movements.

*Limbs lamed by rheumatism* are treated like the stiffness, with this difference, that the superabundant force of the parts adjacent to the diseased one must be diminished by derivative movements, in order to increase the strength of the part diseased.

#### SPONTANEOUS DISLOCATION OF THE ARTICULATION OF THE RIGHT HIP.

A prisoner in the House of Correction at Grandenz was obliged to keep to his bed for two years, owing to a swelling of the articulation of the right hip, accompanied with great pain at every movement, as well as with a particular sensation in the articulation as if two cartilages were rubbed together. The whole limb appeared to be but little shortened, and this case had the greatest similarity to an arthroxerosis. Externally, blisters, moxas, glowing iron; and internally, cod-liver oil, iodine, and many other medicines, had been used without the least effect. For a long time the patient remained without medicines, and then the hip disease did not improve.

Pressings and kneadings of the suffering hip, and derivative movements with the healthy lower limb, stroking movements to the abdomen from the diseased hip, etc., so improved the patient in six weeks, that he was able to walk with two sticks anywhere, and complained only of a slight shortening of the foot, while the swelling in the joint was entirely gone. The suffering side appeared the thinner of the two.

#### MENTAL DISEASES.

Mental diseases are either exaltation or depression of



the different mental functions; and in their treatment the following rules are to be observed:

1. The direction in which the mental disease acts shows on which of the nervous parts we are to act, and the state of the mind shows whether the activity of these parts must be increased or diminished. The more definite a mental disease is, the more certainly can we indicate the corresponding influence which is to be exerted. In dubious cases, diagnostic and preparatory movements must be performed with the greatest care and caution.

2. The increase or diminution of the activity of the nervous system is produced either by derivative or specific movements, according to the peculiar character of the disease and the condition of the patient.

3. As other diseases, which may be successfully treated by movements, such as hypochondriasis, hysterics, piles, scrofula, paralysis, convulsions, chlorosis, diseases of the lungs, etc., are generally the cause of the mental diseases, or are either complicated with or results from them, due regard and consideration must be had in the treatment whether the mental or the bodily disease should be treated first and alone or not; or whether a mixed treatment should be immediately adopted, of both the mental and bodily diseases in conjunction.

4. Patients who are in a state of exaltation must be treated by passive and slight active movements only; while those in a depressed state, as far as their body permits, must make more active movements, and be diverted by amusing games.

5. If there is a general disproportion in the psychical state of the patient between the central and peripheric nervous activity, the principles mentioned in the treatment of nervous diseases must be observed; and if it be necessary to exert specific influences on the brain and its nerves, gentle percussions, vibrations, point-shaking, sharp and gentle frictions, squeezings, pressings, rotation, and overturnings, etc., are used. On the spinal marrow,

we act specifically by longitudinal and transverse chop-pings, longitudinal and transverse frictions in one direction, tremulous shakings, percussions, flexion of the trunk, etc.

6. If the mental disease shows itself in violent periodical fits only, the movements are discontinued during these paroxysms. The other patients suffering from mental diseases are continually under the treatment, and, according to the condition of their health, require longer or shorter intervals.

7. It is understood that the psychical and dietetic treatment is to be combined with the movements.

It is to be observed that mental disease has been successfully treated by mechanical influences, as for instance, by the turning-table, on which the patient, with his feet towards the centre of motion, is fastened in a supported-sitting or lying position, and then by a mechanical apparatus turned round in a slow, quick, equal, or decreasing manner. The curative effect of this manipulation is manifested by the change in the respiration and pulsation, by the production of giddiness, and an uncommon excitement of the *cænestesis*. This has been useful generally in melancholy and obstinate patients; also to those suffering from fits of insanity, and in mania with a suicidal tendency. Quiet and indolent patients have been roused and excited by this manipulation; and in some nervous diseases, especially in some cases of epilepsy, it has been successful.

Patients with phthisis, or with apoplectic disposition, must use these movements very carefully and with restriction. They are to use also a particularly-constructed turning-chair, on which the patient sitting upright can be turned around his own axis with a velocity of about 120 revolutions in a minute. The effect of this chair is similar to that of the turning-table, and is only modified by the different positions of the body with respect to the turning point. These turning manipulations, whether produced

by such machines or by free movements of the body itself, act very similarly.

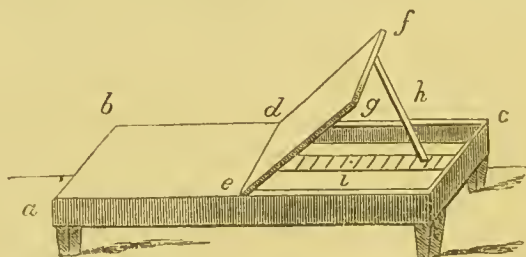
There are also the rocking and swinging movements, which have so much influence on the brain and nervous system. Their effects on the healthy body unfortunately are not sufficiently known, and consequently are not sufficiently made use of. Their employment, however, would be very desirable in all those diseases which have hitherto baffled our most strenuous efforts, and which, far from our being able to cure, we cannot, at present, even mitigate.

We must observe that in later years many mental patients have been cured, or very much improved, by gardening, labouring, and other rural employments.

The recent cures of idiotism and cretinism are owing partly to the movements by which children afflicted with this disease have been treated. Two years ago active movements were introduced in the Lunatic Asylum at Sonnenstein, in Saxony, which, according to the author of a pamphlet on this subject, had a beneficial influence, and are still used.

#### APPARATUS FOR THE TREATMENT OF DISEASES.

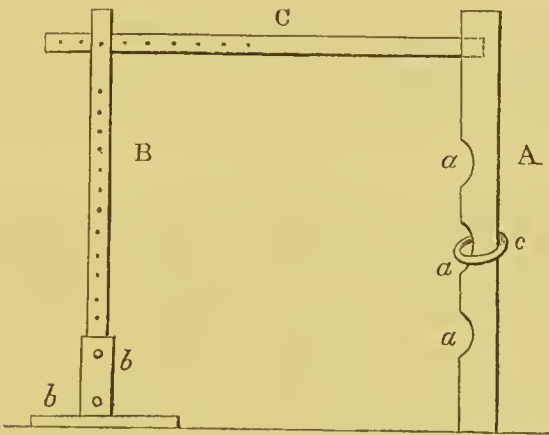
Many movements can be more easily exercised if the operator has at his disposal certain apparatus, such as the following. The first of these contrivances is a cushion or mattress-frame. This consists of a level chest resting upon



short feet, *a*, *b*, *c*, of five inches in length and two and a half in breadth. Half of the top is fixed, but the other half, *d*, *e*, *f*, *g*, is moveable by means of a hinge, so that

this half may be placed at different angles in respect of the fixed half. A stay, *h*, attached similarly by a hinge to the side, *fg*, supports the elevated half, which forms a greater or lesser angle with the horizontal plane, according to the position of the lower end of the support, on the notched lath. This chest is covered by a moderately-filled cushion, which assumes the requisite angle with it when the moveable half of the top is elevated. This cushion-frame is employed when movements are to be performed in a lying, half-lying, reclined-supported, sitting, and kneeling position.

The second apparatus is a stretching frame, which by the accompanying explanation may serve equally as a machine for lifting. It consists of two upright standards, A, B, and a cross-bar, C.



The standard A is fixed, and has three circular excavations, *a a a*, cut out of the side opposite standard B. The standard B is fastened by two bolts into the moveable foot *b*, which slides on the floor, and can therefore be placed at any required distance from A. The standard B is channelled out at the upper end in the manner of a fork, so as to embrace the cross-bar C, whose other end is morticed into A. A third bolt pierces through the fork part of B and the cross-bar C, and thus uniting them,



gives stability to the whole apparatus. Through the standard B, at the distance of half an inch from each other, wooden pins or pegs of half an inch diameter are passed, which project about nine inches on either side, and serve for grasping with the hands. If an individual take a stretching-lying position, the apparatus will assume the form represented in the figures at pages 175 and 176.

A strap, *c*, which can be buckled tighter or looser round the standard A, gives a firmer hold to the feet. The distance between A and B must be regulated by the height of the individual, and is effected by sliding B, and altering the junction of the upper bolt. But in the actual performance of stretching movements, the cross-bar and its upper and lower bolt are removed. Two assistants then keep hold of the standard B, and allow it very gradually to revolve round the middle bolt, at the will of the operator. If it be desirable to use the apparatus for lifting, it is employed as represented in the figure, wherein the cross-bar C serves as a lifting or heaving beam.

#### DRESS.

Dress is of much importance in the ordinary affairs of life; it is still more so in the treatment by movements, during which it is necessary to have the utmost freedom of action in all parts subject to our will.

Unfortunately most parts of our dress exercise a very prejudicial influence on our organism. The obstructions so caused may be compared to the effects of passive movements, which we described under the name of pressing, squeezing, and ligature. It is principally to this last that we must compare the effects of the hat, cravat, waistcoat, stays, petticoats, trousers, and garters, if these articles of apparel should be tight, which is often the case.

The hat often produces headaches, atrophy of the bones, and loss of hair.

The cravat gives occasion to congestions of the head,



giddiness, humming in the ears, red face, and diseases of the eyes.

Stays and trousers, in their present fashion, and tight waistcoats, produce a constriction of the lower part of the chest, and the upper part of the abdomen, by which the expansion of the chest and abdominal cavity on both sides is prevented; the diaphragm must necessarily descend more than is required for breathing freely, and press the abdominal organs downwards to the anterior side of the abdomen, whereby hernia is very often originated.

The consequences of tight bands to the petticoats have been observed in eruptions, inflammations, and even ulceration of the skin, in a transversal lineal direction on both sides of the abdomen. Similar effects are observed in men, and especially in soldiers, who over-tighten their dress with straps of leather.

The stays, besides the above-mentioned injurious tendencies, have also the effect of a pressing and squeezing movement, continued for a long time on a very large surface. They impede the activity of the intercostal muscles, the expansion of the thorax, and consequently of the lungs; they produce many diseases by the mere mechanical pressure on the tender, soft glands of the female breast; the development of the breasts is prevented; the lacteal vessels become narrow, and adhere together; the prominency of the nipple is hindered, the result of which is the impossibility of suckling, whence arise dangerous fatal metastases of milk, as well as induration, scirrhus, and cancer, according to the observation of Siebold, Jörg, etc. The narrowness of the thorax is followed by dislocations, distortions, and curvatures of the ribs, chest-bone, and vertebræ; by curvatures of the spine in all directions, round back, high shoulders, the adhesion of the parietes of the thorax with the internal organs, asthma, short breathing, cough, irregular circulation of the blood, formation of polypi in the heart and in the large vessels of the chest, and the

ossification of these important viscera; blood-spitting, ulcers of the lungs, empyema, general emaciation, phthisis, hydrops, etc. The secondary symptoms of this vicious state of the circulation are congestions to the head, headaches, giddiness, lethargy, apoplexy, inclination to fainting, pains of the eyes, bad sight, humming in the ears, hemorrhage from the nose, catarrh of the mucous membranes of the cavities of the nose, mouth, throat, etc., varices of the blood-vessels of the throat, and tumefaction thereof; awkward increase in the size of the arms, swelling of the feet and legs, etc.

By the inward pressure of the ensiform cartilage of the chest-bone, and by the compression of the abdomen, the activity of the stomach is deranged, the digestion is bad, the appetite is deficient, cardialgia, eructation, nausea, sickness, vomiting of blood and food, flatulency, diarrhœa, induration, cancer, narrowness, volvulus of the intestines, obstruction, induration of the mesenteric glands, colics, tenesmus, piles, fistulæ of the rectum, lientery, dysentery, etc., are developed. The continual pressure of the short ribs of the right side on the liver produces inflammation of that organ, induration, bilious disorders, an impure yellow colour of the skin, increased nervous sensibility, bad humour and irritability, jaundice, ascites, induration and ulceration of the pancreas.

The pressure on the short ribs of the left side produces inflammation, induration, and ulceration of the spleen. The pressure on the dislocated tender muscular parts and of the crooked spine is followed by diseases of the kidneys, such as gravel, sand, stone, dysuria, strangury, hemorrhage from the bladder, and hernia of this organ, inguinal hernia, irregularities of the menses, morbid discharges from the sexual organs, chlorosis, atrophy, hysteria, uterine epilepsy, induration and swelling of the ovaries, scirrhus and cancer of the uterus and vagina, oblique position of the uterus, polypus in this organ, retroversion of it, etc. Dr. Ludwig, of Leipzig, observed

the impression of the busk of the stays on the forehead of a new-born infant; and in a post-mortem examination of a female, he found that the pressure produced by the stays on the abdomen, which was followed by obstruction of the intestines, was the primary cause of melancholia in this female. The pressure of the stays during pregnancy produces uterine hemorrhage, by the solution of the placenta, abortion, unhealthy deformed children, miscarriage, difficult parturition, varices of the veins, etc. The list of these diseases (which, except those arising from the female sexual organization, are incident to males also, who are accustomed to tight waistcoats and waistbands) could be still further extended, and might be summed up in the phrase, a short, sickly, and uncomfortable existence—this fearful list, I say, has not been able hitherto, notwithstanding all these fatal consequences, to prevent the use of stays, which kill every year more than the most virulent pestilence. It is astonishing that this custom should be still so general, and that there should not have been formed associations of at least professional men (to whom the plea of ignorance cannot avail), who abandoning this noxious practice in their own families, and discouraging it, so far as their influence might extend, would be able perhaps to induce the non-professional to follow so laudable an example. We have associations for the prevention of cruelty to animals, and is the human race less deserving of our protection than the brute creation?

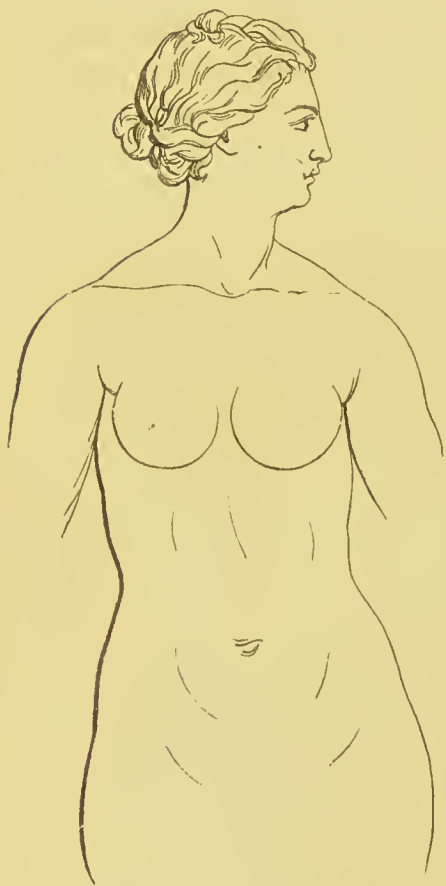
The objection that fashion prevents the formation of a similar anti-stay society is not just; for the real laws of beauty of the male and female human body are based on the right proportion of its single parts, in their mutual relation to each other, and to the body itself, as well as in their highest perfection, for the attainment of the aims of our destiny.

The Emperor Joseph II., known by his philanthropy, prohibited repeatedly the wearing of stays in all convents,

orphan establishments, schools, and other public institutions for the education of youth, and all schoolmasters were obliged to reject as scholars such girls as wore corsets.

Twenty years ago, as a means for the suppression of the fashion of wearing stays, Dr. Riedel proposed making the female delinquents in the houses of correction, and those condemned to death, to wear stays on their last walk to the scaffold.

That the external regular appearance of the compressed thorax does not correspond in any way with an equal development of its constituent parts, we can see from the following illustrations;\* and if we compare this with a



1. Outline of the Venus of Medicis.



2. Outline of a lady compressed by stays.

\* These illustrations are, with the exception of No. 5, copies of those published sixty years ago by Sömmerring in his pamphlet on "The Effects of Stays," from which we extracted the above-mentioned list of diseases.

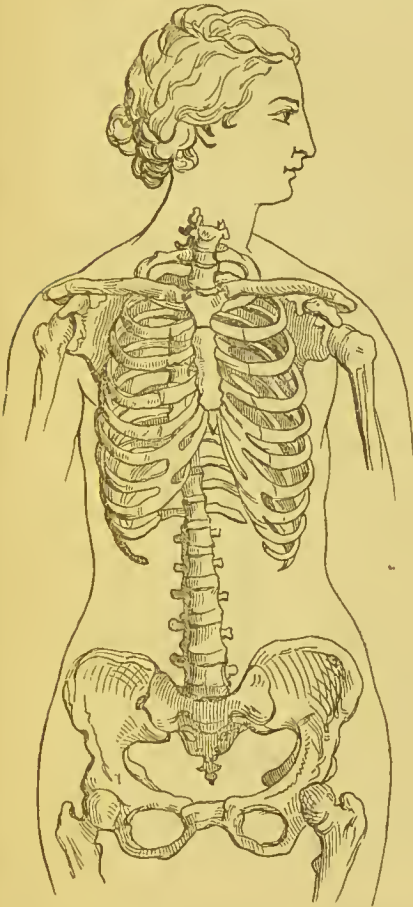


healthy regular thorax, undeformed by stays, we shall find that the natural oval form is changed into a pyramid, the basis of which is turned upwards.

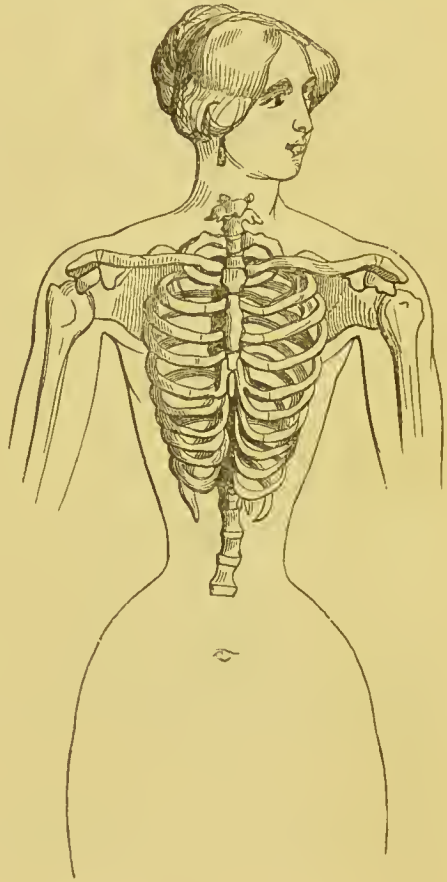
Garters, as well above as below the knees, produce directly a waste of the parts in a circular line, varices of the veins, swellings, ulcers of the legs, cold feet; and indirectly, congestion of the head, lungs, and heart.

There is a case on record, in which a lady could not be relieved by movements from her sufferings until she had loosened her garters, which had previously prevented the equal distribution of the blood to the lower limbs.

Tight bracelets and the fashionable mode of button-



3. The anterior view of the thorax in the Venus.



4. The same in a lady deformed by stays.

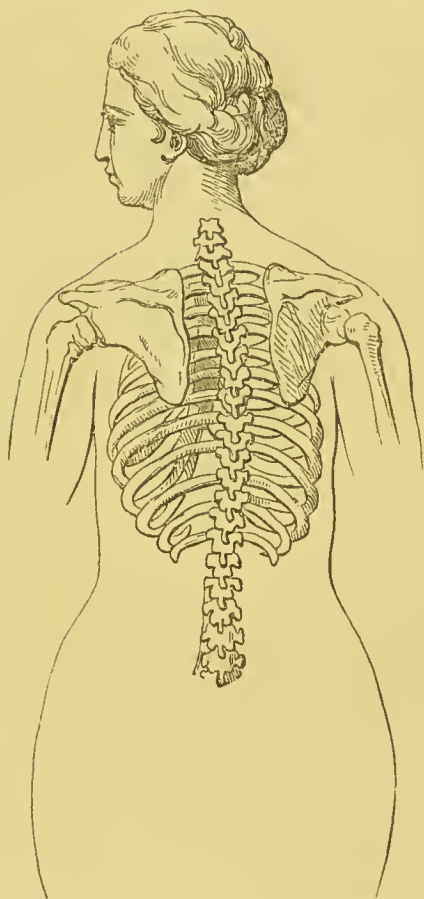


ing the gloves very tight produce similar squeezing effects upon the hands, which by the compression become red, and more easily suffer from chilblains.

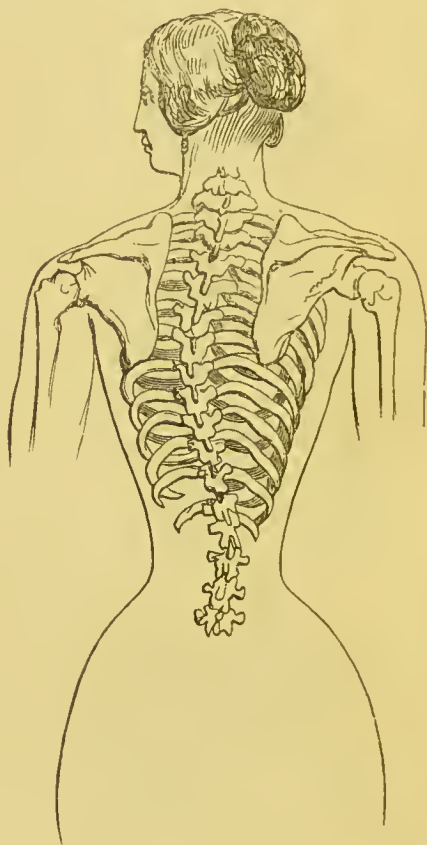
Tight stockings also produce, according to their length and strength, a greater or less stagnation of blood in the feet, and consequently congestions in other organs.

The inconveniences of high-heeled and narrow shoes and boots have been mentioned under the article of walking: we need only add, that the pressure of narrow shoes increases the liability to chilblains, and produces deformed toes, ill-growing nails, corns, and bunions.

The braces and straps press on the shoulders, which



5. Posterior view of the thorax in the natural state.



6. Posterior view of the thorax compressed and deformed by stays.

pressure provokes a reaction, in consequence of which the shoulders are brought up or forwards.

Having shown the bad consequences of our dress, we must admit that the English tailors of the present time have much improved the dress of gentlemen, with the exception of the upper part of the trousers. This part must not reach higher, according to Professor Chaussier, than the upper line of the os ilium, while its anterior part should cover the hypogastric region only, on which it is buttoned; while the two back straps should be buckled on the sacrum itself, by which arrangement this dress is fastened without pressing the sides of the abdomen, since in this manner the waistband acts principally on the outside of the os ilium itself, under the upper edge of this bone and above the articulation of the hip. Another advantage is mentioned by the Professor, that the bowels are kept in their right position without pressure on the stomach, and the braces, which he rejects entirely, do not cause so much obstruction, because they have only to sustain the short part which is above the os ilium.

With respect to stays, they can be entirely replaced by movements acting on the muscles of the back and shoulders, as experience shows us in many females.

During the treatment by movements, the dress must be according to the medium temperature of the place where the individual is. Ladies and gentlemen wear trousers according to Chaussier's prescription; the former with a blouse, and the latter a jacket, which must be entirely comfortable, and permit all movements of the arms and trunk without any inconvenience; head and throat without any covering. There should be no tightness either on the limbs or trunk.

Gaiters and shoes are preferable to boots and those shoes which lace up above the ankles.



## APPENDIX.

OBSERVATIONS ON POPULAR AND MEDICAL CURES OF DISEASES BY MECHANICAL MEANS ALONE, OR IN COMBINATION WITH OTHER METHODS OF TREATMENT IN USE BEFORE THE TIME OF LING.\*

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### ABORTUS.

1. To persons disposed to hemorrhage and abortion, wearing a warm bandage round the stomach, or trousers, as well as daily and moderate exercise in the open air is recommended (Osiander).

### ABSCESS OF THE LUNGS.

2. It is related that Callimachus was attacked with a dangerous abscess in the chest, and was thought to be dying; his servants began to divide his goods, a favourite monkey, seeing what was going on, imitated the servants, and put a red cap on his head, with which he entered the room of the dying man. Callimachus, notwithstanding his sufferings, could not refrain from laughing heartily; the consequence of which was a strong vibration of the organs of the chest and the rupture of the abscess, by which his life was saved (Paullini).

### ACIDITY.

3. A hypochondriacal student was cured of continual acidity of the stomach by travelling ten miles in a stage-coach (Osiander).

\* These observations belong properly to the historical part of the treatment by movements.

## AFTER-PAINS.

4. Proper bandaging is a remedy for soothing after-pains, and preventing the pendulous state of the abdomen which results from frequent child-bearing.

5. In Paris it is the custom to cover the abdomen with a napkin, attached and supported by a towel, which is put round the back and fastened in front.

6. Resting on the side and gently rubbing daily with a soft sponge, accelerate the cure of a local enlargement that sometimes occurs after parturition (Osiander).

## ANEURISMA TRAUMATICUM OF THE PALM OF THE HAND

7. Was cured by a tourniquet peculiarly constructed for pressing on two opposite points (Salamon).

## APOPLEXY.

8. Apoplexy, incomplete paralysis, congestion of the head, suppressed menstruation, deafness arising from congestion, have been treated by dry cupping on large surfaces, even on whole limbs, by Junod's sucking apparatus, by which the mechanical pressure of the atmosphere is diminished according to our will in a desired degree.

## APHRODISIA.

9. (Morbidly increased sexual activity.) Ovid knows of nothing more successful than long travelling; and Napoleon than flight.

10. Rhazes advises fasting, much exercise, and frequent intoxication.

11. The passion for hunting sometimes produces in men total anaphrodisia, which, however, soon disappears on change of occupation.

12. The same effect is produced by continual riding on horseback (Osiander).



## ASTHMA.

13. Walking till tired, rubbing of the whole body, and particularly of its inferior parts, when exposed to the sunshine or fire, are very effective (Osiander).

14. Dry cupping applied to the stomach or back is very efficacious in asthma (Popular remedy).

15. Strong ligatures of the arms and legs have proved efficacious to a young girl of seventeen years of age, after all remedies against the *acute asthma of Millar* have been applied without effect. The thighs were bound with ligatures above the knees, and the arms above the elbows; but the binding of the left arm especially caused the immediate disappearance of the asthma (Osiander).

## APPARENT DEATH.

16. In order to restore the circulation, we rub the body all over with a rough cloth or brushes, particularly the præcordial region, the inner sides of the arms and legs, the palms of the hands, and soles of the feet.

17. An excellent mode of exciting animation is for a strong man, with his mouth applied to the mouth of the patient, to inflate the lungs, while the nostrils are shut.

18. A bellows is still better for inflation; care must be taken to cleanse the nostrils and throat from mucus and phlegm with a feather. The tube of the bellows should be surrounded with a piece of linen applied to one nostril, while the other, as well as the mouth, is closed by the assistant, and the air is inspired, taking care that the cover of the larynx, or epiglottis, be pressed down, to prevent the air entering the stomach instead of the lungs.

19. *Apparent death of children*.—The means of strengthening or restoring apparently dead or fainting children are—

(a) A warm bath.

(b) Rubbing the body with the hand or a brush.

(c) Blowing into the child's mouth.

(*d*) Tickling its nose with a feather.

(*e*) Moving the child up and down after the bath.

20. Tickling the nose with a feather, crying the patient's name in his ear, shaking the body, and striking the soles of the feet and hands (Popular remedy.)

#### BIRTH.

21. In a case of difficult birth, sneezing has been excited by tobacco, or by putting a feather in the nose (Swieten).

22. The Indians in North America shut the mouth and nose of the women in labour, to mitigate the pains of parturition (Rush).

23. A similar mode is mentioned by Hippocrates as a means of promoting the expulsion of the placenta.

24. Labour-pains, which ceased during the birth, have been reproduced by laughing (Vering).

25. Rubbing the body gently all over with warm hands, friction of the breast and stomach, are the oldest remedies for alleviating parturition (Plank).

26. By an erect position, labours have been not only accelerated, but even the use of instruments, which were before thought necessary in the lying position, has been avoided (Denman).

27. In order to promote the after-birth, the remedy recommended to lying-in women is to blow strongly in their hands, or to cough.

28. For the same purpose, the patient's rubbing and pressing softly her stomach with her own hand is recommended.

#### BLEEDING FROM THE NOSE.

29. In hemorrhage of the nose, Galen recommends holding the head upwards, and binding the arms and legs firmly with bandages.

30. Other remedies are, compression of the bleeding nostril with the finger.

31. Binding a thread on the little finger, between the nail and first articulation, or binding together the ring fingers of both hands; sucking the patient's neck is often used (Hochheimer).

#### BLEEDING CAUSED BY LEECHES.

32. Squeeze the skin round the wound made by leeches, with an instrument such as laundresses use for hanging up linen, which instrument is previously lined with sponge.

33. Exhausting bleedings from wounds made by leeches are stopped by compression.

34. Many persons prefer a pressure with the finger, to all other remedies preventing hemorrhage.

#### LOSS OF BREATH.

35. If, in consequence of anger and screaming, children lose their breath, the best remedy is to strike with the palm of the hand between their shoulders (Popular remedy).

#### CANCER.

36. A lady who suffered from a malignant cancer on the breast, was cured by a little dog frequently sucking her nipple (Richter).

#### CEREBRAL FEVER.

37. Compression of the carotids is recommended by Blond.

#### COLD AND COUGH.

38. After a cold, exposing ourselves, warmly clothed, daily to the open air, and taking a walk in fine weather, is better than stopping in warm rooms or, what is worse, lying in bed.

39. Hildebrand, the celebrated clinical professor, often said to his pupils, a cold lasts with a doctor a fortnight, and with exercise in the open air, but without him, half a month.

40. To rub the chest hard with a brush, and wear a large piece of oiled silk on it, was the advice of Blumenbach.

#### COSMETICS FOR THE SKIN.

41. Gentle friction with a cloth produces a freshness and red colour in the skin (Osiander).

#### CRAMP IN THE CALF.

42. To stamp the feet against a footboard, or to rise from the bed quickly, relieves cramp in the calf.

#### CRAMP IN SINGLE MUSCLES.

43. Ironing with a warm smoothing-iron is sometimes very effective against cramp in single muscles (Osiander).

#### CURVATURES.

44. The beginning of crookedness of the spine, thorax, or shoulders may be prevented by sleeping horizontally on a horsehair mattress; friction; swinging dumb-bells; dancing, and gymnastic exercises (Osiander).

#### CSÖMÖR.

45. Against the Hungarian disease termed *Csömör*, which occurs when the stomach is overcharged with fat meats, rubbings, strikings, and stripings are used by the country people.

#### CYANOSIS.

46. In the *blue sickness*, a Prussian physician recommended making children scream, in order to promote a regular circulation (Hufeland's Journal, 1826).

#### CARDIALGIA.

47. The negroes bind a rope firmly round their body (Winterbottom).

## CHLOROSIS.

48. Osiander advises slight frictions of the inner sides of the thighs, the perineum, and the back with the palms of the hands; riding on horseback, walking, dancing, swinging on a rocking-chair, and weaving, as all these promote the suppressed menstruation; the use of the spinning-wheel has been also recommended.

49. The movements of the arms and legs during spinning are considered by Ramazzini as very important in disorders of menstruation. He says he has often sent young girls with irregular or suppressed menstruation to a weaver instead of to a doctor.

50. In similar diseases, carousal parties (whirling on wooden horses) were recommended. The patient should sit in such a manner that her head be nearer the centre than her feet; by the rotation the blood is forcibly driven to the feet and sexual organs, and the menstruation often appears suddenly (Hermann).

51. Chlorosis is very often cured by exhilarating amusements, brisk motions in the open air, gardening, a country life, lodging in a house exposed to the sunshine, early rising, walking, etc.; all these simple remedies are highly preferable to wines and spirits, as well as to all pharmaceutical medicines (Osiander).

52. Frictions of the body all over with woollen cloths, before dinner, are very useful (Popular remedy).

## COUGH,

53. Which threatened apoplexy and suffocation during the fits, was perfectly cured by circular compression of the stomach (Klaus).

## CONSTIPATION.

54. The mechanical extension produced by air-clysters was of the best use against constipation. The operation was repeated three or four times, with an interval of



a quarter or half an hour, and even after the most obstinate constipation there has been alvine relief.

55. The mechanical effect of a simple injection of water, of the temperature of the body, is better than all other remedies (Kopp).

56. Extension, by injecting air into the rectum, was recommended against obstinate constipation by Maxwell.

57. The most simple but important remedies for promoting the action of the bowels are general frictions, recommended by the ancient physicians, and also by Boerhaave, especially friction of the abdomen. They produce the best effect when employed after a bath in the morning, and done with a rough woollen towel or cloth, till the skin becomes red; they may also be used without a bath.

58. Soft percussion on the abdomen with a wooden instrument, or leather, was recommended by the French physicians.

59. Walking with bare feet in a room was sufficient to produce a motion (Richter and Joubert).

#### CONSUMPTION.

60. Amongst the most important means of preventing consumption may be enumerated, working in the fields, and other active occupations in the open air.

61. Persons who have much exercise are less disposed to consumption than those of sedentary habits. No consumptive person can be cured by any remedies, without exercises.

62. Riding on horseback is recommended in England, since Sydenham and Pringle's time. The first declared it to be as great a specific in consumption as mercury is in venereal diseases, and as bark in agues (Camper).

63. Baglivi, who opposes the use of medicines in chronic diseases, prescribes for consumptive persons exercise in the open air, and in the spring, walking after the plough.

64. Haller and Sprengel recommend botanising, as

being not only a remedy for a weak chest, but altogether beneficial to the system.

65. Boerhaave prescribed for his consumptive patients a ride on horseback before breakfast, and prolonging these excursions farther and farther; rubbing the body all over in the morning, as well as in the evening, with a warm and dry cloth; sleeping in an upper room; going early to bed, and rising early, etc.

66. Change of place, travelling, living in warm climates, are the principal remedies for consumptive persons, in the beginning of the disease (Sir James Clark).

67. The ancients recommended sea voyages, in mild climates, for consumption, etc. (Carter).

68. Exercising the lungs by loud reading, singing, and gently blowing the flute.

69. Quantz says, that two young persons who could scarcely blow a bar in one breath, from weakness of the lungs, became so strong, after cautious and continued exercise on this instrument, that they were able to blow as long as others, and even to sound the trumpet.

70. Sounding a trumpet is sometimes very advantageous in this disease, the chest is thereby expanded, and not only the lungs but the chest become stronger.

71. Osiander mentions two persons suffering from hæmoptysis, who sounded glass trumpets, and by these means became stronger.

72. Authenrieth quotes the following as one of the most important means, in predispositions to phthisis, for the expansion of a narrow chest and for strengthening weak lungs. "Breathe deeply, slowly, and with energy, daily, a quarter to half an hour, which is to be repeated more or less often, and to be regularly continued."

73. Ringing a bell and swinging the dumb-bells are exercises very well known, and considered of great importance in England (Osiander).

74. Ascend a mountain every day, for the purpose of extending your chest (Idem).

75. Lying horizontally on a hard mattress, with the head on a small pillow, contributes much towards strengthening and extending the chest.

76. To persons disposed to pulmonary tubercles, fencing is of great service; short breathing and tightness of the chest often disappear after a few weeks.

77. Moderate exercise in the sunshine is very important for strengthening and vivifying consumptive persons.

78. In northern Germany, persons disposed to laryngeal phthisis used to wear a rough band, which is very useful by its continual friction.

#### CONVULSIONS.

79. Compression of the carotid arteries was used by Authenrieth and Bland.

#### DIARRHŒA.

80. Celsus recommends continued riding and driving.

81. A remedy of the Egyptians against diarrhœa is rubbing the stomach and navel with the finger, dipped in almond oil (Proserp. Alpinus).

#### BAD DIGESTION.

82. Celsus prescribes reading and speaking aloud, in order to promote digestion.

#### DROPSY.

83. Frietions of the skin with flannel; rubbing the abdomen with olive or linseed oil, three or four times a day, half an hour at a time, has been found very beneficial as a remedy against abdominal dropsy, as it causes a considerable increase of the urine; compression is also a popular remedy.

#### ELEPHANTIASIS.

84. Dubois in Paris, and Chelius in Heidelberg, used compression for the diseased limb.

85. Rust employed it also as an accessory in the same disease.

86. Rhazes recommended similar mechanical means.

#### EPILEPSY.

87. An epileptic fit has been stopped by touching the patient's body with an iron rod.

88. A strong ligature of the limb from whence the *aura epileptica* begins, is sometimes sufficient for preventing the access of epileptic convulsions (Osiander).

89. The compression of the carotids is recommended by Preston and Earle.

90. The passive extension of the contracted thumbs during the fit is a popular soothing means.

#### SECRETION OF MILK.

91. In order to promote the secretion of milk, rubbing the nipples softly is very good.

92. In order to empty breasts which are painfully full, and to make the milk flow, frictions and resting on the side are sufficient.

93. By all such occupations in which the hands and arms are engaged, as for instance, weaving, etc., the secretion of milk is increased.

94. To prevent the secretion of milk. The day after the confinement, the whole chest is covered with cotton wadding, above which compresses are put, which are strongly fastened with towels (bandages), surmounting the chest, this operation is continued till the so-called milk fever is passed (Astruc).

#### SUPPRESSION OF MILK.

95. The people of Germany used to bind the breasts strongly, in order to suppress the secretion of milk.

96. In France, the binding is sometimes employed immediately after the birth.

## MISCARRIAGE.

97. Daily walks in the morning are of the greatest importance for pregnant women, because they contribute to prevent a miscarriage, even when there is a disposition thereto (Tuckert).

## MOTHERSPOTS.

98. Boyer and other French surgeons' advice is, frequently to press the spot with the fingers. Roux says, a mother who did so to her child was very successful.

## FAINTING.

99. Waving cold air on the patient, daily frictions of the feet and back with rough cloths (Popular remedy).

100. When soldiers during a march, or drilling in a hot day, are in a fainting state, they should not be bled, according to the old and bad custom, but their clothes should be taken off; they should be taken into the shade, and their nostrils tickled to excite sneezing (Isfording).

## FATNESS.

101. A hard bed, much walking, and violent exercises especially diminish fatness (Celsus).

102. Chambers recommends gymnastics of every kind in fatness (Gulstonian Lecture).

103. Against the *cachexia* fatness, the best remedies are, frictions, running, riding, fencing, and all corporeal exercises, etc. (Cælius Aurelianus).

104. Aetius recommends exposure of the body to the sun when walking, rather than when lying, by which means perspiration is increased, the fat diminished, and the body dried.

105. The same is recommended by Lord Bacon, for removing the disposition to this and many other chronic diseases.

106. Persons disposed to fatness should ascend a moun-



tain daily, and never neglect it, even during the hottest sunshine (Osiander).

107. To prevent the development of his predisposition to fatness, Lord Byron dressed in flannel clothes, and played every day two or three hours at ninepins with his servant (William Ward).

108. Jockeys walk daily ten English miles, till their weight is sufficiently reduced (Osiander).

109. As a substitute for the want of exercise, daily frictions all over the body are of the greatest importance, but they must be performed with rough and dry cloths, and be long continued, in order to quicken the circulation of the blood, to prevent stagnation, and remove fatness (Galenus).

110. Richter states that weak and sedentary persons, instead of out-door exercise, may substitute frictions of the body every morning and evening, with rough cloths or a strong brush, until the skin becomes red.

111. Percussion is recommended by the French physician Perry. The patient is to strike his abdomen either with an instrument termed a *palette*, which consists of a single piece of leather, or at least with his hand, to quicken, by the oscillation produced, the circulation of the blood. This remedy is particularly recommended against stagnation, obesity, swellings, flatulency, chronic complaints of the liver, and other diseases of the abdominal organs, scrofulous atrophy of children, emaciation of a single limb, after dislocation of the articulations, hardened tumours, and so-called cold abscesses, ganglia, and encysted tumours (Dict. des Sciences Médicales).

#### GIDDINESS,

112. Which often precedes fainting, and is produced by irregular circulation of the blood in the brain and eyes, very soon disappears, after the body is placed in a horizontal position with the eyes closed (Osiander).

## GONORRHOEA.

113. To those who suffer from atonic chronic gonorrhœa, riding on horseback is recommended (T. Cooper).

## GOUT AND RHEUMATISM.

114. The *remedium arenarum et arundinarum* consisted probably in putting hot sand on the part affected, and gently beating it with a cane, which cured, according to Suetonius, the Emperor Augustus of ischiatic pains (Pieliz).

115. The exercise produced by driving in a carriage lessened the pain and stiffness of the feet, if the gouty inflammation is decreasing (Osiander).

116. A little dog resting continually on the affected parts, and pressing by its weight, was recommended against podagra (Borellus).

117. To the Laplander's popular remedies belongs violent sucking till bleeding (Brooke).

118. Hard rubbing with a woollen cloth or glove (Osiander).

119. Frequent friction with a flesh-brush is a popular English remedy.

120. Rubbing with a wooden currycomb (Old popular remedy).

121. Stroking with a little iron fork until the skin becomes red. The *Perkinismus*, performed with two long needles of a different metal, of which one end is thicker than the other, put together with the unequal ends, is probably useful, as well by the friction with these needles as by the electricity produced by the difference of the two metals.

122. In rheumatic pains of the back, this part is covered with flannel, and ironed with a tailor's goose (Prussian popular remedy).

123. To produce pain by beating with birch-rods, and whipping with stinging nettles, is recommended by Alberti.

124. Friction, as practised in the lower part of Saxony, and particularly in the country, is a popular remedy against rheumatism and other pains, and consists in rubbing the skin with both thumbs in the same direction.

125. The Chinese proceeding is very analogous to it. In rheumatic disorders, the patient lies down, stretched on a bank, and a little boy beats the chest and back, and the skin on the stomach is rubbed, which they call *karabaz* (Saars).

126. The *toogi-toogi* of the wild inhabitants of the Tonga Islands is also very similar to the preceding (Martin).

127. Shampooing is very similar, and well known in the Eastern countries, especially in Persia and Egypt, according to Chardin and Savary. It consists in rubbing, kneading, beating, and stretching the limbs; afterwards a servant presses the skin, kneads the muscles, and makes the limbs crack, without causing pain, rubs the skin with a glove, pours on it some soap-suds, and then dries it. This process is called by the Arabians *mass*, which means to touch gently.

128. In the Russian vapour-baths, the bather is lathered and rubbed with slender birch-rods, covered with leaves previously softened and soaped (Styx).

129. In arthritic pains, compression of the arteries was used by Kellie.

130. For patients who can neither employ active exercise in the open air, nor any other exertion of the muscles, Oribasius and others recommend reading and speaking aloud, as a remedy for the gout.

131. Rheumatic swellings of the articulation have been treated by douches and percussions at the same time (Thompson).

132. Rheumatic and similar pains in an arm which had been previously wounded by a gunshot, had in vain been treated with ointments, opium, etc.; the compression with a woollen band cured the pains (Krimer).

133. Violent rheumatic, tearing, and periodically returning pains, from a wound in the calf of a soldier, were entirely relieved by tight spatterdashes (Krimer).

134. Rheumatic tearing pains, caused by a blow from a piece of granite, were healed, and quite disappeared after a tight ligature with a handkerchief (Krimer).

135. Rheumatic pains of the thighs and legs cured by compression with bands, is also related by Krimer.

136. Numerous cases of rheumatic gout, etc., debility of the extremities, treated by compression and percussion, are communicated by Dr. Balfour, of Edinburgh, in his illustrations of the power of the above-mentioned passive movements.

#### HEALTH.

137. Hippocrates says, the man who eats cannot be healthy, except he also works.

138. Health is only to be expected from active labour (Galen).

#### HICCOUGH

139. Is cured often through sneezing, produced by looking at the sun, or by tickling the nose (Osiander).

140. Some people get rid of it by binding down the ring finger. The trouble caused by doing so occupies the attention, and Osiander has often seen this simple remedy very successful.

141. Galen recommends putting the forefinger of the left hand three times into the mouth.

142. Pliny recommends scratching the palm of the hand.

#### HOOPING-COUGH.

143. Fits of hooping-cough are immediately stopped by compression or ligature of the wrist, particularly of the right hand, according to Piretti (Journal Hom. de Paris).

#### HYDROCEPHALUS.

144. For children who are disposed to this disease,



the best remedy is holding the child upright, and making its bed in a strongly inclined direction (T. Clarke).

145. A lady who had the sad misfortune of losing nine children with dropsy in the head, saved her three last by contriving that they should be always kept as nearly as possible in an upright position (Osiander).

#### PRESERVATION OF THE HAIR.

146. For preventing the hair from falling off early, and promoting its growth, it is necessary to comb the head very often, with hard pressure of the comb on the skin (Osiander).

#### HEADACHES (MEGRIM).

147. Boerhaave advised men who suffered from chronic headaches, to use a warm bath frequently, and to rub their feet afterwards every morning with a piece of flannel or cloth dipped in cold water.

148. If people would but resolve to rise every morning at five o'clock, and continue it during the summer, and take an hour's walk, they would get rid of headaches. (Osiander).

149. Simply combing the hair carefully and constantly before going to bed, has relieved a lady from chronic headache (Osiander).

150. Hard rubbing of the feet with rough cloths, after a foot-bath, is also one of the best external remedies (Buchan).

151. Some people have been cured of their headaches by travelling. A female in Milan, who was taken every Wednesday with a headache, left the town every Tuesday, and came back only on Thursday from the country (Jos. Frank).

#### HYDROCEPHALUS CHRONICUS.

152. Twenty-one cases cured by compression of the



head by Engelmann, are published in the *Heidelberger Annalen*, 1838 and 1842. The compression was methodically made with strips of adhesive plaster.

153. Acute dropsy of the knee was cured by rest, the horizontal position, and compression of the limb (Frank's Magazine).

#### ASCITES.

154. Morelly cured ascites, a result of cold and gastric fever, by compression of the abdomen with a girth.

155. Rush and Speranza mention the good results of compression in this disease, and in swelling of the abdominal organs.

156. Bricheteau mentions five cases of ascites successfully treated by similar compressions (Frank).

#### OEDEMA OF THE LOWER EXTREMITIES.

157. Bricheteau published two cases cured by circular compression of these limbs (Frank's Magazine).

#### HYPOCHONDRIASIS.

158. The gymnastics of the ancients, and their curative method by regular gymnastic exercises, which were looked upon as the principal conditions of health and welfare, deserve to be recommended, particularly to the hypochondriac. Baglivi, who complains with reason that modern physicians rely much more on their syrups and medicines than upon the above-mentioned means, wished the introduction of gymnastics, and observes that diseased persons prefer remaining inactive and swallowing unpalatable medicines, rather than take some reasonable exercise, which in so many cases is the only method of restoring health.

159. The gymnastic exercises recommended in this disease by the Greek physicians, besides running, throwing the quoits and spear, springing, and wrestling, consisted in walking, riding, swimming, hunting, navigation, play-

ing at tennis, dancing, speaking and reading aloud, bathing, etc.

160. For those who neglect all other gymnastic exercises, an hour's daily walk, or climbing, is of great importance. The feeling of ease which follows great muscular effort demands repetition, like a sensual pleasure (Fabret).

161. In all ages, travelling was looked upon, especially in the northern parts of the globe, as the best remedy against hypochondriasis.

162. Exercise and daily change of place prevent the feeling of depression, and excite the love of life, because the mind is variously and agreeably occupied.

163. Sydenham prescribed riding. The patient began with a short distance, and persevered until he had accustomed himself to ride in all weathers for a distance of four miles, and even to perform long journeys on horseback, by which his health was entirely restored.

164. Travelling on foot in pleasant society (Seume), as well as short sea excursions, are much preferable in this disease to ordinary travelling in closed carriages.

165. Other gymnastic exercises might be mentioned as excellent in the treatment of hypochondriasis, as for instance, dancing and playing at tennis. Dancing, which we are told was practised even by Socrates, is the universal and customary expedient of all nations for cheering the mind, and therefore ought not to be neglected in the cure of disease, the principal remedies for which consist in an active, amusing life; the various kinds of playing at tennis, to which may be added billiards, are therefore so serviceable, as they not only put the muscles into activity, but at the same time amuse the patient. Galen wrote a book especially on the advantages of playing at tennis, in which he tries to prove that this is to be preferred to all other games, since everybody, even the poor, weak, and old, are able to profit by this excellent gymnastic exercise, which puts all parts of the body into activity, and also amuses the mind.

166. Playing at tennis produces, like hunting, a cheerful and invigorating feeling (Osiander). With the playing at tennis is combined a more simple remedy for the hypochondriasis, namely, a long-continued movement of the arms, by means of swinging dumb-bells; recommended by Aretæus.

167. Sawing wood, fencing, or swinging of the arms alone, belong also to the means of curing this disease.

168. An artist, seventy years old, who for many years had not left his room, assured Osiander that, after having made the above-mentioned exercises, he felt himself growing quite young again. This cheering and cordial effect is perhaps attributable to the course of the arterial blood being changed by the quick movements of the arms.

169. The best amusements to be recommended to all who are not able to travel are digging and gardening; all the muscles are set in motion, and the circulation of the blood is in consequence accelerated (Osiander).

170. Fits of the greatest mental depression have been often cured by the exercise of ringing church bells, and by music (Richmead).

171. Frictions on the abdomen with a woollen cloth have restored the formation and circulation of the blood in the bowels (Osiander). The Kalmucks cure hypochondriasis, which shows itself by fear, anger, and sadness, and which they call *seshikle*, by beating.

#### HYDROCEPHALUS CHRONICUS.

172. Compression of the head by strips of adhesive plaster, in form of the *mitra Hippocratis* (J. Möller).

#### HYSTERICIS.

173. A strong ligature on the trunk cured the feeling as if a ball penetrated the head (Boerhaave).

174. A soft rubbing or *stripping* of the convulsive limb with the hand; or in hysterical cramps, pressing one hand

on the stomach, and the other on the back, has in a short time produced a sedative effect.

175. In some cases a blow with a *kantshu* (an instrument of that name) has produced a striking effect, not only in fainting convulsions, but real hysterics (Med. und Chirurg. Zeit., 1819).

176. Rural occupations, long journeys, cold sea and river baths, frictions of the whole body with rough cloths, are the best non-medical remedies for pains in the womb (Osiander).

177. Osiander relates that a hysterical patient was relieved after being beaten unexpectedly by one of her relations.

#### ILEUS.

178. Ileus and tympanitis have been cured by the mechanical action of air-clysters (Asmus).

#### IMPOTENCE.

179. Shampooing, as practised in the oriental baths, is of great importance (Le Gentil).

#### INTOXICATION.

180. Headache, nausea, and other consequences of intoxication, disappear after a walk in the open air, or a ride on horseback in the morning.

#### INFLAMMATION OF THE MAMMÆ, WITH OR WITHOUT ULCERATION.

181. We have observed repeatedly chronic swelling of the mammæ, previously treated in vain by different remedies, cured in a short time by strips of adhesive plaster, which *keep* up the glands of the chest.

182. Trousseau lately recommended the same; and Kivitsch, who tried the different methods of compression by strips of adhesive plaster, by circular bandages, by excavated metal plates, and by Scutin's apparatus with

starch, prefers this last, with which he treated thirteen cases. The results were satisfactory. He mentions the following advantages of the treatment of these diseases of the mammæ by compression.

(a) The duration of the disease is considerably shortened.

(b) The pain is quickly alleviated.

(c) The formation of pus is promoted.

(d) Easier opening of the abscess.

(e) The application of poultices is superfluous, and a suitable dietetic treatment only is necessary; the patient is able to do his work as soon as the pus is removed.

#### INFLAMMATION AND FEVER.

183. The inhabitants of Manilla, and the Chinése, make use of pinching and kneading of the skin, as well as drawing it upwards, until it becomes red or even blue (Osiander).

#### INFLAMMATION OF THE SKIN, AFTER EXTENSIVE BURNINGS OF THE LIMBS.

184. An equal circular compression was recommended by Heine.

#### JAUNDICE.

185. The best preservative in hot climates against chronic inflammation of the liver is exercise and occupation (John Davy).

#### INTERMITTENT FEVER.

186. Some persons have got rid of quartan fever in consequence of blows (Seneca de Beneficiis).

187. Violent exercises were looked upon, in ancient times, as a remedy against cold fever (Osiander).

188. Ohlenschlager says, that his servant, when suffering from ague, has got rid of it after running like a madman through the streets.



189. Celsus advises rubbing of the body and violent exercise, in the beginning of a fit of ague.

190. In South America, the best preventive against it is plenty of exercise and wine (Osiander).

191. The ancients rubbed oil into the body. At a later period, frictions of the whole body, with a woollen cloth dipped in spirits, were recommended. The friction was to be commenced an hour before the paroxysm.

192. Chladni cured himself of ague, by applying strong bandages to the extremities of his body (Hufeland's Journal).

193. Kellie and others have applied tourniquets to the limbs, in the beginning of the cold fit of the fever, and found it very advantageous (Van Baerle).

194. Aaskow quotes two cases cured by frictions. A sailor who was cured had afterwards pains in the thighs and legs; these parts had not been previously rubbed. The pains disappeared after frictions (Frank's Magazine).

195. In a part of Russia, the peasants employ ligatures, in the beginning of the cold stage, on all four limbs, which they take off after half or a quarter of an hour (Chladni).

#### LAMENESS AND STIFFNESS OF THE LIMBS.

196. Frictions with woollen cloths were looked upon, even by the ancients, as the best remedies against lameness and emaciation of the limbs. T. Grosvenor, surgeon, of Oxford, was celebrated for the cure of contracted joints and lameness by friction, and his system of friction, published 1825, in Oxford, is of great practical value.

#### MASTURBATION.

197. Much exercise in the open air, hard labour, and activity in the household, depression of the excited imagina-

tion by earnest and prosaie oecupation till tired, in order to get a sound sleep, are the most important remedies (Osiander).

#### NIGHTMARE.

198. Against this and bad dreams, sleeping with the head in a more erect position is recommended. A physician who suffered from nightmare gives the following advice: go to bed with a determined will, as soon as the fit begins, to bite your tongue or under lip (Pitshaft).

#### NIPPLES.

199. Boer recommended rubbing the nipples with the fingers during pregnancy, in order to make them fit for suckling the baby.

200. Flat or not projecting nipples ought to be sucked by an adult woman or an older child, to prepare them for the nurse.

201. Drawing up the nipples with the fingers many times a day, some months before confinement, is a popular remedy.

202. Sometimes a pipe is employed to draw up the nipples, and India rubber rings are made use of to keep them up.

203. You may also employ a small-necked bottle, previously filled with warm water. Turn the bottle upside down, and, as soon as the last drop of water is out, place it on the nipple, which then goes into it and opens itself (Popular remedy).

204. Unmarried females often suffer also from pains in the glands of the chest and nipples. Frictions with the hand, or the wearing of a hare-skin, with the hairs to the chest, are then used (Osiander).

205. To prevent sore nipples, those occupations are necessary in which the arms are moved, in order to develope the pectoral museles and the glands of the chest (Osiander).

## NYCTALOPIA.

206. In tropical climates nyctalopia seems to be produced by the blinding sunshine. The crew of an English ship tied up one eye during the day, in order to keep the sunbeams from it, by which means they succeeded in seeing with one eye at least in the evening (Osiander).

## ORCHITIS.

207. Slight compression is recommended by Fricke of Hamburg, and Koch.

## PESTIS.

208. The practice of rubbing the body with oil is used by the Egyptians.

## SUBSTANCES STICKING IN THE THROAT.

209. Portions of food "gone the wrong way," as it is said, when laughing or speaking during meals, may be the cause of death in a few minutes. In such cases, the general custom is to strike the patient's back, between his shoulders, with the palms of the hands (Popular remedy).

## PILES.

210. A horizontal position of the body is one of the most soothing remedies for painful piles.

211. The principal means of curing piles are, to avoid an indolent, debauched life, and sedentary habits, and to take daily exercise, such as walking and riding.

212. The exercise of sawing wood seems to be very excellent for those who suffer from piles. Those persons in particular who, by the varices proceeding from piles, are prevented from riding, ought also to take daily walks and dig in gardens (Osiander).

## POISONING BY LAUDANUM.

213. Among the remedies for poisoning by laudanum

is mentioned, holding up the patient, shaking him, and striking his back and shoulders with the hand or with the sole of a slipper (Med. Chirurg. Zeitung, 1833).

#### POISONING BY THE VENOM OF A SNAKE.

214. The negroes in Sierra Leone apply a strong bandage above the wounds produced by the snake, then the poison is sucked out by one of the attendants, and they afterwards try to produce sneezing and vomiting, besides other means (Winterbottom).

215. In ancient times sucking the wound was used (Celsus).

#### POISONING BY THE COBRA CAPELLA.

216. The most dangerous symptoms preceding death are drowsiness and sleep, which the Hindoos try to prevent by beating the poisoned with a rope while the patient is walking, partly by his own will, partly obliged by the assistance of others.

#### PAINS AND OBSTINATE KNOTS OF THE BREAST

217. Are sometimes cured by sucking and rubbing them (Osiander).

#### PAINS IN THE KIDNEYS.

218. A patient who could not be relieved from pain in the kidneys by very energetic means, such as bleeding, cupping, etc., was benefited by walking, and wiping his loins with cloths dipped in water (Gerson and Julius's Magazine).

#### PAINS IN THE JAWS (NEURALGIA MAXILLARIS)

219. Have been allayed by compression of the carotids (Liston).

#### PARALYSIS.

220. The ancients have recommended swimming in the

sea in paralysis. C. Aurelianus advised the supporting of the paralysed limbs by bladders filled with air.

221. The shampooing or rubbing and kneading of the limbs, as practised in the Persian and oriental baths, are means by which the lost mobility of the limbs may be restored.

222. The flagellation with birch-rods, or rubbing and whipping, as used in the Russian baths, are remedies by which the irregular circulation of the blood may be improved.

223. John Hunter recommended the employment and use, as much as possible, of the paralysed limb, to direct the mental activity on it continually, which will increase the action of the limb.

#### PODAGRA.

224. Bulmerincq mentions a patient, sixty years old, whose feet were every morning as cold as ice, and entirely insensible, to such a high degree, that the hardest pinching did not produce the least sensation. Servants were daily occupied to squeeze, knead, and rub his legs and feet. After half an hour's labour, warmth and feeling were restored in those parts. Bulmerincq assures us that he himself has often seen two or three servants entirely fatigued by this squeezing operation; the stronger their kneading became, the better pleased was the patient; his breathing was then more free, and a slight perspiration, with a feeling of easiness, finally ensued.

#### SUPPRESSED PERSPIRATION.

225. Active exercise is the most natural expedient to promote perspiration. Charles II., king of England, was found to be two pounds three ounces lighter after playing at tennis (Camper). ~

226. Those who cannot lead a life according to the principles of nature, but must gain their livelihood by mental labour, ought often to ascend a mountain, saw wood, or play at tennis, in suitable dresses.



## SPERMATORRHIŒA.

227. Cælius Aurelianus advised a hard and cool couch for the night, resting on the side, and not on the back of the body, covering the chine-bone with a thin leaden plate, and a firm ligature of thread around the middle finger.

## SQUINTING.

228. Beer advises those who have squinting eyes, directed towards the nose, to put on both temples a piece of bright stiff silk.

229. A popular remedy is also to place a perforated nut-shell before the eyes.

230. Camper advises the placing of anything coloured on the opposite side, in order to accustom the eye to it.

## STERILITY.

231. Many ladies think dancing makes them fertile (Serres).

232. Rubbing the back was used by the ancients. The Roman ladies allowed themselves to be whipped with strips of leather in such cases (Ovid).

## STIFFNESS OF THE FINGERS.

233. The ancients recommended kneading and softening globules of wax with the fingers (Aurelianus).

## SLEEPLESSNESS.

234. Labour and activity in the open air are most important remedies; they cure sleeplessness, an evil from which such aged persons suffer much who in their earlier years had occupied their mind more than their body. Socrates did not neglect gymnastic exercises; it is said that one day he was seen by Charmides dancing alone, an exercise which he was accustomed to take in harvest time to procure good appetite and sleep.

235. Russel says, it is not uncommon to have the feet

and legs gently stroked and rubbed by the hand of an attendant, a custom practised in India, where it is termed shampooing.

236. Prosperus Alpinus says, rich people allow their bodies to be gently rubbed, in order to produce sound sleep, and as they say, for the refreshment of the body.

237. Franklin advises, in order to procure good sleep and pleasant dreams, to take a walk in the open air before, and not after, dinner. If Franklin could not sleep, he rose and walked up and down his room for some minutes, after which, going to bed, he immediately fell asleep.

238. A man suffering from sleeplessness relates, that if he himself or another person gently stroked his forehead, sleep was produced (Osiander).

239. The Chinese think the custom of rinsing the mouth before going to bed, and rubbing the soles of the feet and the toes separately, a good means of producing sleep (Buckland).

240. The passive movement by portable beds was looked upon by the Romans as producing sleep (Juvenal).

241. Soft combing, brushing, and washing the head will sometimes procure good sleep (Osiander).

#### SLEEPLESSNESS OF CHILDREN.

242. Gentle movements of the cradle. The simplest is the Russian or Lapland cradle. It consists of a quadrangular wooden frame, to which is loosely attached a coverlet of linen. On the four angles of the frame straps are bound, which, joined together, are fastened to an elastic perch close to the ceiling, and is thus hanging over the mother's bed.

#### SCURVY.

243. Cleanliness, active movements, and wholesome diet are the only preventives.

## SCROFULA.

244. The inappreciable importance of change of air and daily exercise in the open air is known (Osiander).

245. The cure of this disease is accelerated by cleanliness, dry frictions of the whole body, active movements in the open air, and riding out in a carriage.

## SEA SICKNESS.

246. Walking in the open air on the deck of the ship is often the best means of preventing vomiting.

247. On bending and pressing the head against an object, the illness diminishes for a short time, but immediately returns when the head is withdrawn from its support.

248. A passenger, being on the deck of a ship, sat down upon a chair, and imitated the movements which we make when trotting on horseback, and thereby diminished his nausea (Froriep's Notices).

249. Wearing a bandage on the stomach, and a ligature round the head, soothe the pains and serve as a preservative.

## STRANGURY.

250. Those who suffer from strangury, and are unable to urinate in the lying position, were immediately relieved if they knelt and bent forwards, or sat on a commode.

## STRICTURE.

251. Hennemann recommends sucking through a glass, if there is no instrument at hand, or if the catheter cannot be employed in the case of strictures.

## SUFFOCATION.

252. Danger of suffocation is often removed by percussion and pressing on the back (Popular remedy).

## BURSA.

253. A lead plate, or a compressed leaden globe bound over it, is often used.

## SWOLLEN GLANDS.

254. Rubbing and pressing, often repeated, assists in curing swollen glands.

255. The growing of a goitre may be prevented by long and frequent frictions with the hand or a woollen glove.

## SWOLLEN BREASTS.

256. Persons lying-in who do not suckle their children, or if they do not suckle sufficiently, become afflicted with swollen breasts, often as hard as cartilage, by which means severe pain and sometimes fever ensue. In such cases the best remedy is, to let the breasts be sucked by an adult, or by a child already accustomed to suckle.

## ST. VITUS'S DANCE.

257. This disease of the sixth century was different from our chorea, and was cured by dancing three hours, after which they were free for a whole year from the fits (Schenk de Græffenberg).

258. Horst, a physician of the seventeenth century, says, that those persons affected with involuntary movements, danced during the day and night, till they fell on the ground as in a trance. Afterwards they were quiet till the next year, when they again felt an agitation, which obliged them to return to the chapel at Drefelshousen, near Ulm, in order to dance. Horst knew a woman who had repeated this pilgrimage and dancing cure for twenty years (Roth).

259. In St. Vitus's dance the convulsions can be soothed by rubbing the suffering limbs with woollen

cloths, by simply stroking with the hand, by dry cupping, and touching a piece of iron (Wiehmann).

260. In some cases, music and dancing were useful (Pepini).

261. A girl suffering from St. Vitus's dance was relieved by the vibrations of the air produced by the beating of a drum, for which purpose two drummers were called to beat the drum during the fit (Salzburger Med. Chir. Zeit., 1817).

#### WANT OF SUFFICIENT NERVOUS POWER, AND FATIGUE.

262. This state, which is the result of too much intellectual or bodily labour, or of weakness, is for a short time instinctively relieved by yawning, which is generally accompanied with pandiculation of the limbs. Yawning is a very deep and long breathing; it is not only a strong natural stimulant for the respiratory process, but also, like a drink of fresh, cold water, an awakening and strengthening means for the exhausted vital power (Hom. R. Lexicon).

#### TETTER.

263. Attention to diet is the best remedy to cure the tetters, but particularly much exercise in the open air (Fuller).

#### TIC DOULOUREUX OF THE FACE.

264. A strong compression and friction of the cheek with a rough cloth (Oslander).

265. The douloureux of the face, treated by many different means, was at last relieved only by a strong compression of the head; the fits, which came in the beginning five or six times a day, afterwards appeared only once a week, and were relieved by the pressure (Krimmer).

266. A tic of the face, produced by cold, in a lady who had always cold feet, was cured by the lower parts of the legs and feet being whipped (Oslander).



## TOOTHACHE.

267. A strong compression of the temporal artery in front of the ear (Schellhammer and Voga).

268. Gruithuisen recommends mastieating for a quarter to half an hour a small piece of cork, with the painful tooth and the opposite one; by these means the pains will subside.

269. For preserving good teeth, and preventing tooth-ache, it is very essential to rub the gums with a toothbrush dipped in fresh water. This ought to be recommended from childhood (Sterne and Osiander).

## TYPHUS FEVER.

270. Rubbing with snow was recommended by Hildebrand, as one of the surest remedies against typhus.

## URINARY DISORDERS.

271. To ladies who are suffering from urinary disorders, frictions with cloths are very useful.

272. Urinary complaints, which arise from a protuberant or pendulous abdomen, are relieved by a bandage round the body; girths and stays, without busks, fitting to the body, may also be used (Osiander).

## VARICES.

273. The pains of the venous varices of the feet are soothed by a horizontal position, soft rubbing of the swollen vessels, or by a simple ligature of the calf (Osiander).

## VOMITING.

274. To encourage this the ancients used the feathers of the flamingo, which they pushed down the throat.

## WORMS.

275. Active exercise of the muscles in the open air is recommended by P. Frank.

## LEUCORRHOEA.

276. Frank recommends riding on horseback ; he says, it is a pity this wholesome exercise is not generally practised by ladies.

FINIS



## NOTE.

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LING's system of movements has lately attracted more attention, and different medical men have called on the Author to obtain information with respect to it.

Dr. Neumann, who has been often mentioned in this treatise, received a commission from the Prussian Government, last month, to visit Sweden, Russia, and England, to examine into the practical results of Ling's method of treatment by movements, with a view to the establishment in Berlin of a special gymnastic institution of this kind. Dr. Neumann received this commission in consequence of a report of the Chief Medical Board of Prussia, highly favourable to Ling's system.

Some, who have derived great benefit from this treatment, have opened a subscription for the establishment of an institution in London, at which the teachers of free schools, and others, are to be instructed in the practice of movements calculated to promote the healthy development of the human frame, and at which the poor, to whose cases these exercises are suitable, may receive treatment.

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